

THE IRON AGE

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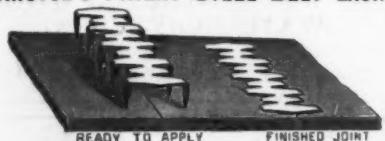
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See page 50

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THE IRON AGE

New York, Thursday, March 11, 1909.

RAIL MILL ELECTRIC MOTORS AT GARY, IND.*

Features of an Unparalleled Installation—A Calculation of Time and Horse Power for Each Pass.

BY B. B. SHOVER.

Of the Gary plant, as planned, the slip and docks are complete; one-half of the ore yard and its machinery, including the ore bins, is finished; also one group of blast furnaces—of which three are in blast—with its complement of blowing engines and gas-washing plant, and the central pumping station. The pig-casting machines have all been in operation for some time. Four more blast furnaces, with their auxiliary buildings, are about 75 per cent. completed. The No. 3 electric power station and storage-battery are ready for operation; the turbines in No. 2 power station have been in operation since July, 1908, and the remainder of the station is rapidly being completed. One-half of one open hearth plant, which consists of 28 60-ton furnaces, is in operation, a second plant is practically complete, and foundations are ready for a third. The entire shop group has been in operation for more than a year. The rail mill has been tried out. Most of the machinery has been installed in the billet mills. The foundations are laid and part of the structural material of the merchant mills is already erected.

In the part of the works now complete there are installed 110 electric traveling cranes with an aggregate lifting capacity of 3812 tons. The capacity is 22,025 hp. in direct current and 5312 hp. in 440-volt alternating current. Of 6600-volt alternating current motors, 27,000 hp. have already been operated. About an equal aggregate number of horsepower will be required for the operation of that part of the plant now under construction, and still more for parts which are at present being designed.

Electric Power Station and Equipment.

For the electric power station it is intended to use the gas available from eight blast furnaces. On account of the large amount of current, the especially large number of circuits and units, and also to make the operation more reliable, this plant is divided into two sections, which are called power houses No. 2 and No. 3, respectively. There are installed in these stations a total of 17 gas engines, each rated at 3000 hp., but capable of about 50 per cent. overload. Only approximately 50 per cent. of the available power as calculated will be used in this station. This allotment will make allowance for furnaces out of blast and for shortages of gas due to troubles that are liable to occur in furnaces during operation. The electrical equipment of power houses No. 2 and No. 3 comprises 15 2000 kw. alternating current units, two 2000 kw. direct current units, all driven by gas engines, and also two 2000 alternating current turbo units.

A storage battery was installed for the purpose of minimizing the fluctuation of load on the generating station. The storage battery consists of two separate batteries of 125 cells, 73 plates per cell, each battery having a rating of 4320 amperes, with a momentary rating of from two to three times that amount. They are installed in a two-story building located directly north of the power station, the connection between the two buildings being through a tunnel. The direct current regulation is accomplished by means of two 2500-ampere, 35-volt boosters. The motors and generators of this booster are of the interpole type, controlled by a carbon pile

regulator acting through a motor driven exciter. The alternating current regulation is accomplished by means of special 2000-kw. split pole converters.

The transmission system is in duplicate, each section having sufficient capacity to carry the entire load in case of accident to the other sections. The lines are supported upon a steel tower construction made exceptionally heavy on account of the great height of the towers and the heavy complement of feeders. There are three substations. No. 1 is located in the rail mill and consists of four 500-kw. motor generator sets. These are duplicates of the exciter sets in the power station. This substation normally supplies current for all the direct current apparatus in the shop group, rail mill and billet mill. Substations No. 2 and No. 3 have two units each, duplicates of those in substation No. 1. They normally supply current to the ore unloaders and bridges. The direct current power furnished from the two 2000-kw. gas engine driven units in the power station is used to supply the direct current motors for the blast furnaces and open hearth plants. When the mills are not in operation and only the lights and a few cranes are needed it will be possible to shut down the substation and furnish power direct from the power station. This method of operating will result in considerable saving in expense. A storage battery installed at the substations would be of great advantage and will probably be put in in the near future. There are nine installations of transformers for supplying 440-volt, three-phase alternating current.

Motors for Driving Rail Mill Rolls.

Although electric motors have been used for sometime to drive rolls, the motors used in this plant are several times larger than any motors of their type previously built. Their use for this purpose marks a new era in the industrial application of electric power. The main rolls of the rail mill and rail blooming mill are driven by six induction motors having a combined capacity of 24,000 hp., made up of the following units: Two 2000 hp. at 214 rev. per min., one 2000 hp. at 68 rev. per min., one 6000 hp. at 88 rev. per min., one 6000 hp. at 83 rev. per min. and one 6000 hp. at 75 rev. per min. Details of these motors are given in Fig. 1. In their construction the parts were made extremely heavy and rigid, following out as far as possible the practice which has proved successful in the construction of steam engines for similar duty. The stator frame is of the box type construction and is split into four sections for ease in handling and transportation. The rotor spider is of cast steel and is made up of four sections with two arms per section. The sections are bolted to disk hubs which are pressed on the shaft. On account of their triple speed the two 2000 hp., 214 rev. per min. motors, have separate flywheels weighing 100,000 lb. each. These flywheels are built up of riveted boiler plates, which do not permit of alteration.

The end thrust which may result from a diagonal fracture of a spindle or roll is frequently sufficient to wreck either the mill or the motor unless special precautions are taken. This problem, which is extremely difficult to solve when an engine is used for driving the rolls, is very easily solved when electric motors are used. A device termed a mechanical fuse is attached to the pedestal by two breakable rods. These are so proportioned that they will break only when the end thrust exceeds

* Extracts from a paper prepared for the 235th meeting of the American Institute of Electrical Engineers, New York, March 12, 1909. Mr. Shover is electrical engineer of the Indiana Steel Company. Articles descriptive of the Gary plant have appeared in *The Iron Age* as follows: January 7, 1909, page 1; February 4, 1909, page 373; March 4, 1909, page 713.

150 tons. When the rods give way under this pressure, the rotor is free to move longitudinally away from the rolls, thereby relieving the thrust. To prevent injury to the brush rigging, it is so arranged as to move freely with the brushes, always maintaining their proper position on the collector rings.

The electrical characteristics of the motors are shown by Figs. 2 and 3, which represent the results of tests of the 2000-hp. motor at 214 rev. per min., and the 6000-hp. motor at 88 rev. per min. Reference to these curves

	2000	2000	6000
Horse power:			
Normal continuous rating 40° rise....	2000	2000	6000
25% overload continuous 50° cent. rise.....	2500	2500	7500
50% overload for 1 hr. 60° cent. rise.....	3000	3000	9000
Speed:			
Synchronous.....	214	68	83.3
Full load.			
Maximum slip, %.....			
Performance specification number.....			
Outline drawing number.....			
Bearings:			
FLYWHEEL SIDE.			
Diameter.....	24	26	30
Length.....	60	65	70
COLLECTOR SIDE.			
Diameter.....	24	26	30
Length.....	60	65	70
Thrust collar area.....	575	910	1370
Revolving part of motor:			
Diameter.....	8 ft. 8 in.	21 ft. 0 in.	21 ft. 0 in.
Flywheel effect, lb. at 1 ft. radius.....	354,000	8,950,000	11,600,000
Stationary part of motor:			
Outside diam. of frame.....	13 ft. 4 in.	28 ft. 0 in.	28 ft. 0 in.
Width of frame.....	3 ft. 10 in	3 ft. 8 in.	4 ft. 11 in.
Air-gap, total.....	0.28	0.40	0.40
Induction motor:			
Poles.....	14.	36	44
Horse power.....	2000	2000	6000
Rev. per min.....	214	68	83
Volts.....	6600	6600	6600
Efficiency at full load.....	95%	93%	95.5%
Power-factor at full load.....	89%	80%	87%
Break-down torque.....	6,800 h.p.	5,100 h.p.	18,500 h.p.
Flywheel:			
Material.....	Laminated steel	—	—
Number of sections.....	17 ft.	—	—
Diameter.....	—	—	—
Outline dimensions:			
Height of machine above bottom of base.....	12 ft. 2 in.	21 ft. 0 in.	21 ft. 0 in.
Width of bed-plate.....	20 ft. 4 in.	32 ft. 8 in.	32 ft. 8 in.
Length of bed plate.....	20 ft. 2 in.	18 ft. 11 1/2 in.	21 ft. 9 in.
Total length of shaft.....	22 ft. 4 1/2 in.	21 ft. 3 1/2 in.	24 ft. 6 1/2 in.
Center line of shaft to bottom of base.....	5 ft. 6 in.	7 ft. 0 in.	7 ft. 0 in.
Weights:			
Stationary part of motor.....	42,500	126,000	175,000
Rotating part of motor without shaft.....	30,800	148,000	176,000
Shaft (hollow).....	33,400	34,300	50,000
Pillow-blocks with bearings.....	72,300	105,500	138,000
Bed plate.....	100,000	150,000	185,500
Flywheel.....	109,000	—	—
TOTAL.			
Without flywheel.....	296,000	—	—
Complete.....	396,000	578,000	749,000

Fig. 1.—Details of the 2000-Hp. and 6000-Hp. Induction Motors in Blooming and Rail Mills.—The figures for the 6000-hp. motor, of 88 rev. per min., are the same as for that of 83 rev. per min., except that the former has 34 poles, its breakdown torque is 20,600 hp., and its power factor at full load is 88 per cent. The figures for the 6000-hp. motor of 75 rev. per min. differ in the following respects: Its flywheel effect is 14,100,000 lb.; the number of poles, 40; the power factor at full load is 88 per cent.; the breakdown torque is 16,400 hp.; the rotating part without shaft weighs 209,000 lb., and the weight complete is 783,000 lb.

shows that the power factor and efficiency are near their maximum at the rated output of the motors, and that high values are maintained throughout the complete operating range.

Only two minor troubles have developed so far in the entire installation. On starting up one of the 6000-hp. motors, one section of the rotor resistance overheated, but investigation proved this trouble to be due to a stray piece of arc lamp carbon. In starting up another of these motors trouble developed due to a broken grid in the rotor resistance.

In designing the equipment for these 2000-hp. and

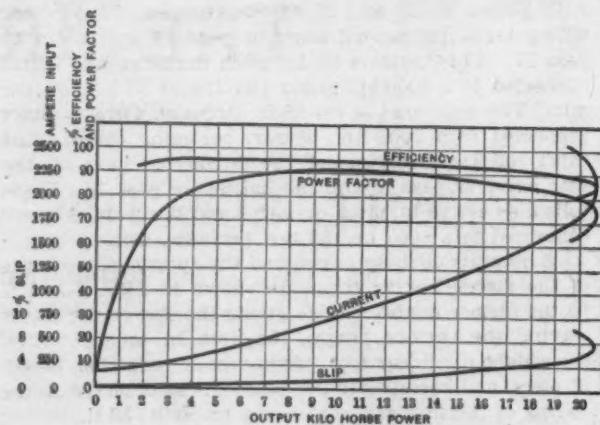


Fig. 2.—Characteristic Curves of the 6000-Hp. 88 Rev. Per Min. Induction Motor.

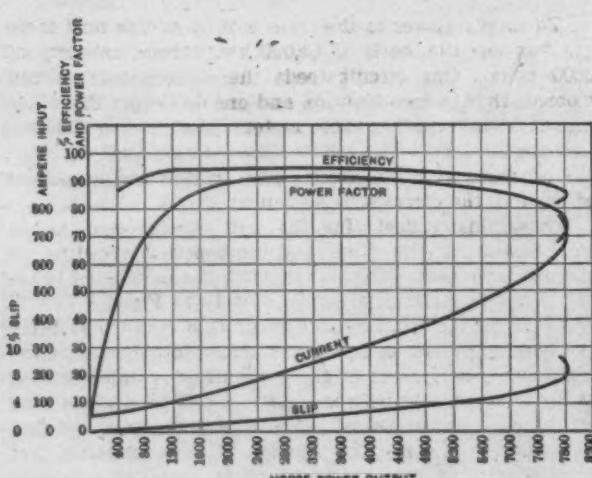
6000-hp., 6600 volt induction motors, not only were the sizes of the motors to be controlled beyond anything previously attempted, but the specifications presented many novel features. For most of the motors the service required a very large flywheel effect. Because of the well-known characteristics of the induction motor, it was clearly recognized that there would necessarily be large fluctuations in current, even though the flywheels were very large, unless some means were employed for automatically introducing resistance into the motor circuit whenever the load was sufficient to cause even as small a change of speed as 2 or 3 per cent. It was desirable that the automatic features be adjusted so as to operate continuously, regulating the current taken by the motors so that the demands on the source of supply for any one motor would be uniform—the motor and its flywheel, meanwhile accelerating and decelerating at a point just below synchronism to meet the power demands of the rail mill which it was driving. [Details of the control apparatus follow.]

Rail Mill Passes.

The rail mill has a capacity of 4000 tons of finished rails in 24 hr. It is not only the largest, but also the only motor driven mill in the world rolling rails directly from the ingot without reheating. There are nine passes in the blooming mill. The first two passes are two-high rolls, 42 in. pitch diameter, running at 6 rev. per min., and are connected to one of the 2000 hp., 214 rev. per min., motors through gear reductions. The next two passes are identical with passes one and two, except that the rolls are 40 in. in diameter and make 10 rev. per min. and are driven in the same manner. The next five passes are made in a 40-in. three-high train, direct connected to a 6000 hp., 75 rev. per min., motor.

The bloom as delivered from pass 9 is then cut in two by shears operated by a 75-hp. induction motor.

The next train of rolls, which comprises a three-high roughing mill



with passes 10, 11 and 12, is operated by means of the tilting table, the second edger or pass 16 and leader or pass 17. This train is 28 in. pitch diameter and direct connected to a 6000-hp. motor running at 63 1-3 rev. per min. The next pass is the 28-in. two-high former, direct connected to a 2000 hp., 68 rev. per min., motor. The third roll train consists of the dummy or pass 14, the first edger or pass 15 and the finisher or pass 18. These rolls also are 28-in. pitch diameter and the train is direct connected to a 6000 hp., 88 rev. per min., motor.

A diagram of these passes and the approximate shapes of the pieces leaving them are shown in Figs. 4 and 5. In the former is also a table giving the size of the pieces leaving the various passes, the area in square inches, the weight per linear foot, percentage of reduction, length of piece, and horsepower per pass—all as observed in the rolling of the first rail, which was an 80-lb., 33-ft., rail.

PASSES	SIZE, OUT.	AREA, OUT.	WEIGHT PER FOOT	PER CENT. REDUCTION	LENGTH OF PIECE	H.P. ON ROLLS
1	20 ¹¹ / ₁₆	876.56	1224	21.20	6.7	1000
2	19 ¹¹ / ₁₆	282.37	918	25.00	9.0	1200
3	18 ¹¹ / ₁₆	214.87	698	23.90	11.8	1600
4	14 ¹¹ / ₁₆	164.82	536	23.30	15.3	1450
5	11 ¹¹ / ₁₆	130.32	424	20.90	19.4	8950
6	11 ¹¹ / ₁₆	107.00	351	17.20	23.5	7650
7	9 ¹¹ / ₁₆	88.00	289	17.60	28.5	6700
8	9 ¹¹ / ₁₆	70.76	930	20.40	35.8	6100
9	7 ¹¹ / ₁₆	58.91	191	16.74	43.1	4500
10	—	44.50	145	24.40	26.0	5500
11	—	31.25	102	29.10	35.6	5100
12	—	21.80	71	29.90	51.1	6200
13	—	18.50	60	15.50	60.4	2850
14	—	16.00	52	13.50	69.7	5650
15	—	12.50	42	20.00	96.3	
16	—	10.07	38	21.38	100.0	1500
17	—	8.62	28	14.40	130.5	950
18	RAN	8.005	26.6	6.09	137.87	7200

Fig. 4.—Table for 80-Lb. 33-Ft. Rails.—Ingot Butt, 20 x 24 In. Top, 18¹¹/₁₆ x 22¹¹/₁₆ In. Length, 65¹¹/₁₆ In. Weight, 8256 Lb.

To supply power to the train motors of this mill there are two circuits, each of 10,000 kw. normal capacity at 6600 volts. One circuit feeds the three blooming mill motors; that is, two 2000 hp. and one 6000 hp. The other circuit feeds the other three motors; that is, two 6000 hp. and one 2000 hp. The estimated combined load with the mill working at full capacity, with voltage and amperage of each of the circuits, is shown in Fig. 6.

In originally designing the mill careful calculations were made of the time and horsepower required to operate each pass. These data, with the calculated interval between passes, are shown clearly in Fig. 7. It will be noted on the right hand side of this curve that there are both solid and dotted areas. The dotted area represents the second piece of the ingot after it had been cut at the bloom shears between passes 9 and 10, and the load estimated with the second piece in pass 10, while the first piece is yet in pass 12. Though it is improbable that such conditions will exist except in cases of the most rapid rolling, it was thought advisable to use them in the calculations of the mill. These calculations deter-

mined not only the total time consumed by the ingot from start to finish, but also the shortest possible time between ingots, the limiting time being in the three-high roughing mill.

These curves were then superimposed on each other at this interval, which was 31.89 sec., until the number of ingots was increased to the maximum load on the mill. Adding the ordinates under this condition Fig. 6 was produced, showing the integrated load carried by the motors. The shaded portion indicates motor and line losses, and the upper line of the curve shows the character of the load on the power station. This cycle, which is 31.89 sec., indicates an exceedingly variable load, the total variations being from a minimum of 4300 hp. to a maximum of 19,010 hp., with an average of 12,025 hp., which makes the load factor on the six-train motors almost exactly 50 per cent. The curve was developed to provide a basis for estimating the size of the storage battery necessary to take care of the fluctuations and keep a constant load on the generating station.

Success of the Installation.

So far all of the apparatus described in this paper, that has been tried out, has been practically a perfect success. Nothing has occurred to indicate the necessity of changing anything to a radical extent. As an example of this, the ore-handling machinery was started up July 23, 1908, and by November 1, 750,000 tons of ore was stored in the yard, with virtually no more trouble from the machinery than would have been experienced at a works which had been in operation for several years.

A comparison between the estimated horsepower and the observed horsepower required for the various passes in the rail mill shows some discrepancy; but because the steel rolled was colder than it would have been in actual practice, since all of the machinery is new and is not operating so quickly as it should, and because also the lack of adjustment of rolls, it is believed that the power required will be very little, if any, in excess of the original calculations. After the roll train motors had been started it was discovered that the stopping of them was an important feature. The 2000 hp., 214 rev. per min. motor when disconnected from the rolls required 2 hr. to come to rest, while the 6000 hp., 88 1-3 rev. per min. motor required 1 hr. and 37 min. to stop. This time consumed would mean corresponding delays in case of breaking of the main spindle, which, of course, could not be countenanced. In order to stop these motors within a reasonable length of time, direct current at 250 volts was introduced into one phase of the winding through an external resistance after the motor had been disconnected from the 6600-volt line. By this device the 2000 hp., 214 rev. per min. motor was stopped in 2 min. and 55 sec., and the 6000 hp. motor in 1 min. and 42 sec. During this time the first section only of the resistance of the rotor was closed. This device is being put in permanently, and a 6600-volt switch connected to one phase, the other side of which will be connected to the 250-volt line through a permanent resistance, and this switch interlocked with the main 6600-volt oil-switch so that both cannot be thrown in at the same time.

Probably no industrial application of electricity has been the result of more careful study on the part of the engineers in charge, or has marked a more general adoption of electric power than the one just described. Although many of the motor applications are not new, this plant is unique in respect to the number and variety of the applications and the size of many of its units. The rail mill now in operation, driven by induction motors with a combined capacity of 24,000 hp., and having a normal output of 4000 tons of steel rails per 24 hr. day, is without a rival. The operation of the plant will, therefore, be watched with more than usual interest, both by steel mill engineers and electrical engineers. Its success will greatly accelerate the application of the electric motor in this industrial field.

Results thus far obtained indicate that not only have the greatest expectations of the engineers been realized, but another stronghold of the steam engine has been carried, and that in the near future the rolling mill engine

is destined to give way to its successor—the electric motor.

Motors for Roll Trains in Europe and the United States.

While the United States has led in the application of electric drive to auxiliary machinery, Europe has pioneered the way in its use for driving roll trains. In the different European steel plants there are to-day about 230 motors with a normal capacity of 19,000 hp. and a

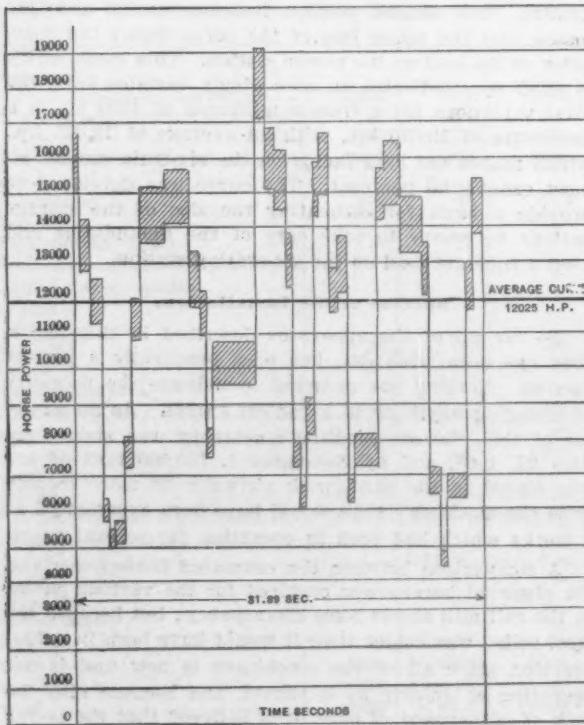


Fig. 6.—Chart Showing Estimated Combined Load on the Power Station for One Cycle of Rail Mill in Full Operation.—Shaded Portions Represent Line and Motor Losses.

maximum capacity of 41,000 hp. used for electric drive of nonreversing roll trains. In addition, one noteworthy installation is that of a 10,500 hp. reversing outfit at the Hildegardehütte mine.

The first application of motors for driving roll trains in this country was made at the Edgar Thomson works of the Carnegie Steel Company, where two three-high roll trains for rolling small rails were operated by 1500 hp., 220-volt, direct current motors. The speed of these motors is varied by shunt-field resistance from 100 to 125 rev. per min. The success obtained by this installation has stimulated the installation of similar outfits elsewhere.

In June, 1907, the Illinois Steel Company put in the first and only reversing mill drive that has been installed in this country. The mill, a 30-in. universal plate, is direct coupled to two 2000-hp., 150-maximum revolutions per minute, 575-volt, shunt wound motors mounted on one shaft; 2200-volt, three-phase, 25-cycle, alternating current power being used to drive a motor generator set consisting of a 1300-hp. motor and a 1300-kw., 600-volt, direct current generator.

On the same shaft is mounted a fly-wheel 100 tons in weight, 13 ft. 2 in. in diameter, the whole making 375 synchronous revolutions per minute.

In August, 1907, at the same works, a rail mill for rolling small rails similar to those rolled at the Edgar Thomson Works was put in operation. The roll trains here, however, were driven by 2200-volt concatenated motors. The primary motor has a capacity of 1200 hp., and runs at 120 rev. per min.; the secondary motor is 600 hp., and runs at 82 rev. per min. In ordinary operation the resistance in the secondary motor is so adjusted that the combined

FIG. 5. Diagram of Diamond and Ball Wind and Diamond Δ D.

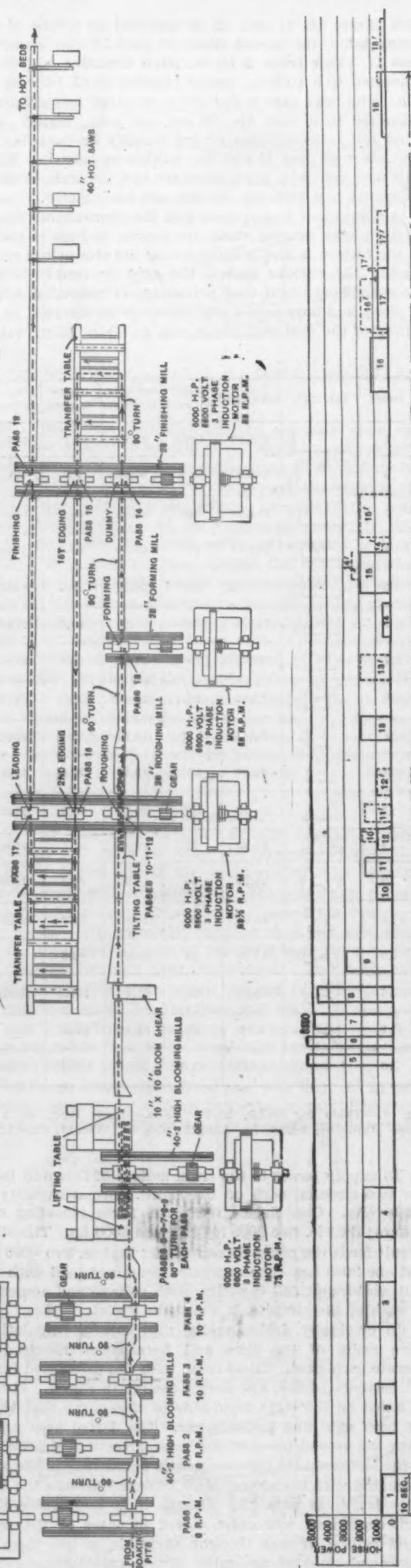


Table 7—Chart Shows Calculated Time and Horse Power Required from Inert to Finished Rail

speed of the two varies between 60 and 80 rev. per min., according to the character of material rolled.

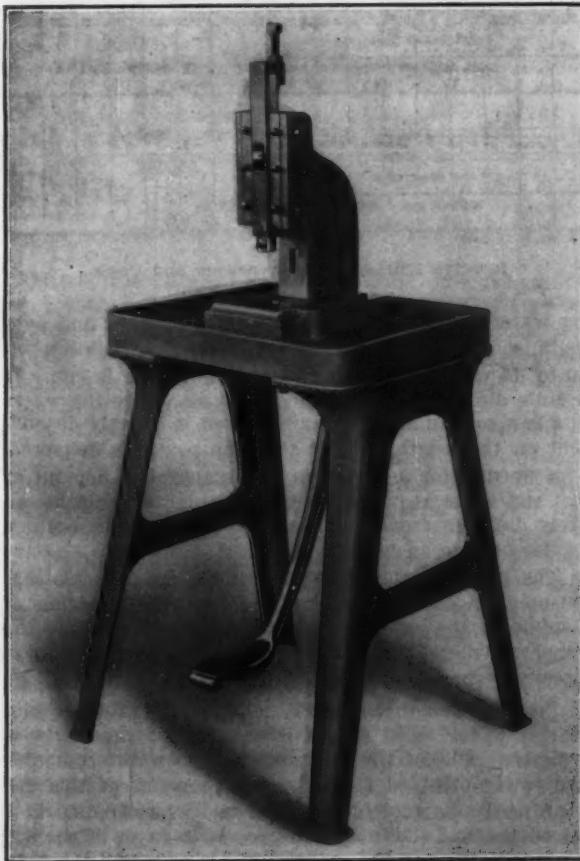
The Storage Battery at Steel Works.

Another electrical device which has only recently been used in the steel industry is the storage battery. On March 27, 1904, the first installation of this nature was made at the Ohio works of the Carnegie Steel Company, Youngstown, Ohio. This battery had a capacity of 1600 ampere-hours, and was used for regulating the load on a direct current station. On April 20, 1905, the capacity of this battery was increased 50 per cent. The success of this installation was so marked that batteries of considerable size were installed at the Lukens Iron & Steel Company, Coatesville, Pa. Two large batteries were also installed at the Illinois Steel Company, South Chicago, one at the Carrie furnaces of the Carnegie Steel Company, Rankin, Pa., and the largest of all at the Edgar Thomson Works of the Carnegie Steel Company, Bessemer, Pa.

In 1906 an additional feature in connection with the battery was contracted for by the Ohio works. This was a combined converter and booster to be used for regulating the variable load from an alternating current plant then being designed. This outfit, however, has not yet been put in operation.

A La Salle Foot Press.

A convenient foot press of substantial construction has recently been put on the market by the La Salle Machine & Tool Company, La Salle, Ill. Its general form and appearance are shown in the accompanying illustration. The principal features of the tool are its solidity of construction and its convenient form. To prevent



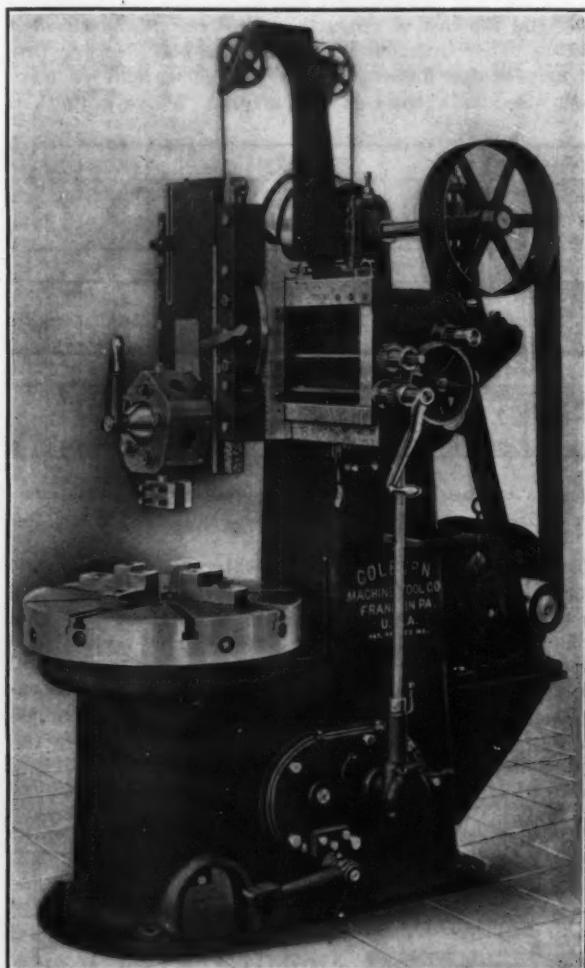
A Small Foot Press Built by the La Salle Machine & Tool Company, La Salle, Ill.

breakage, the lever and slides are made of cast steel. The former has two pivot points, which give a variation in the length of stroke of from $1\frac{1}{4}$ to $2\frac{1}{2}$ in. One of the V-shaped plunger dies is made adjustable with three set screws, by means of which perfect alignment of the punch and die is maintained. A hardened steel block is

inserted in the head to take the contact of the stop screws. Both the table and legs are extra heavy; the net weight of the mounted press is 375 lb.

A Motor Driven Colburn 34-In. Boring Mill.

A standard belt driven 34-in. boring mill, built by the Colburn Machine Tool Company, Franklin, Pa., is shown in the illustration arranged for motor drive. The only changes are the addition of a countershaft and a con-



A 34-In. Vertical Boring Mill Built by the Colburn Machine Tool Company, Franklin, Pa., Arranged with Motor Drive.

stant speed 5-hp. Westinghouse direct current motor, mounted on special brackets at the rear of the machine. This arrangement makes the boring mill independent of line shafts and all other machines, and reduces troubles from belting, because the belts are shorter and on shafts which are mounted on the same frame, and hence will not get out of alignment. The speed changes are made mechanically by the cone pulleys and by the gears in the base. There are in all 16 different speeds which give the table speeds from $2\frac{1}{2}$ up to $68\frac{1}{2}$ rev. per min.

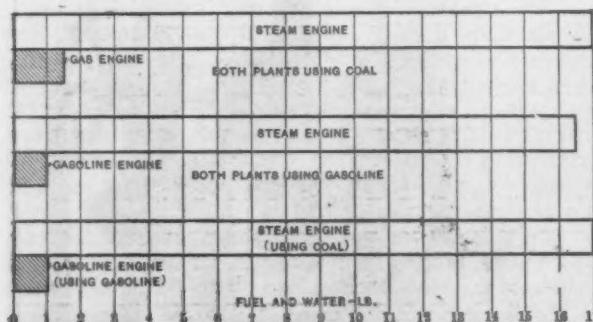
The boring mill is equipped with a five-sided turret which permits five or more operations to be performed on one piece of work without stopping the machine or changing a tool. The turret is mounted on a vertical slide, which may be swiveled to any angle up to 30 degrees on either side of the perpendicular. This is accomplished by first locking the weight by means of the clamp on the sheave wheel bracket on top of the machine and then by turning the crank on the vertical feed shaft.

The feeds are positive, gear driven, for both vertical and horizontal motions, and are provided with adjustable automatic steps. There are eight available feeds for any speed of the table. A special attachment is provided for thread cutting which may be readily applied, and if desired can remain permanently attached to the machine without interfering with its regular operation.

Graphical Comparison of Steam and Gas Engines as Power Producers.

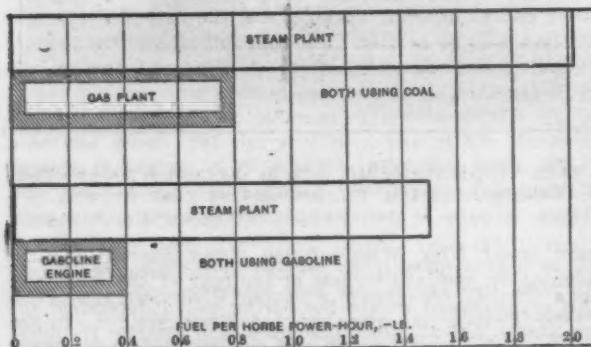
BY HAROLD WHITING SLAUSON.

Owing to the great variety of results obtained from tests of coal and gasoline as fuel for the steam engine and internal combustion engine, it is rather difficult to determine on a set of readings which may be taken as fair averages for the accompanying graphical comparison of these combustibles when applied to the two great prime movers. To compare the efficiencies, fuel consumption and the cost of operation of the steam and gasoline engine under different conditions, the best average performances and highest thermal efficiencies of each have been used as a basis of comparison. Where a thermal



Weights of Fuel (Including Water) Required Per Horsepower-Hour.

efficiency of 15 per cent. and a water rate of 15 lb. per horsepower hour have been used for the steam engine, it is evident that such results could be obtained only in a compound, condensing plant. Likewise, the thermal efficiency of 36 per cent. taken for the gas engine is found in only the best designed motors, and is probably the exception rather than the rule in average internal combustion engine practice. The costs of the fuel used in the comparison (\$4 per ton for anthracite coal and 15 cents per gallon for gasoline) will vary according to the lo-



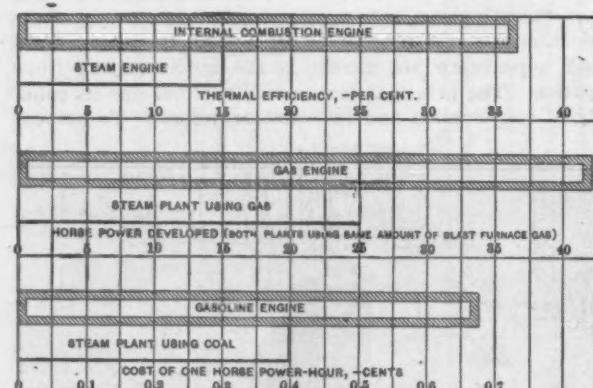
Relative Fuel Consumption.

cality in which each is purchased, but these figures are probably fair averages.

The relative weights of the two power plants, including engine, boiler, fuel and water tanks for the steam plant, and engine, gasoline tank and cooling apparatus for the gas motor would form an interesting comparison. In the case of the gas engine, the minimum weight at which it is safe to construct a motor of a given power is definitely determined, for a gas engine is capable of but a very slight percentage of overload. The fact that the maximum explosive pressure will vary with different forms of mixture, and that all of this force is applied at one instant, determines a certain weight of engine per horsepower below which it is unsafe to design a gasoline motor. The steam engine, however, is capable of supplying for a time an overload greater than 100 per cent., and as this can be accomplished by slightly increasing the boiler pressure and lengthening the cut off, the increased power developed in the cylinder is distributed

over a greater length of stroke and consequently such an excessive strain is not communicated to the cylinder head and connecting rod. This reduction of the maximum pressure in favor of the steam engine, together with the absence of the necessity for water-jackets, will probably bring its weight below that of the gas motor, but the total weight of the entire steam plant will depend on the type of boiler used. The average weight of a locomotive boiler is somewhat over 3 lb. per horsepower, but the introduction of the flash type of high pressure steam generator has enabled this figure to be considerably reduced so that special steam plants may be designed which will compare favorably with the gas plant as far as total weight is concerned. In view of the above, a graphical comparison of the relative weights of a steam and gasoline plant would not be a criterion of general practice, and could only represent a specific case.

In showing the relative weights of the fuel and water required per horsepower-hour for the steam and gas engines, it must be remembered that the water consumption of an internal combustion motor may be set at a more or less arbitrary figure—depending on the amount of radiating surface provided in the cooling apparatus—and that in some motors no water whatever is used. The amount given in the diagram (10 gal. for 40 hp.) is probably more than is used in any motor car, and would in all likelihood be an ample amount for cooling a stationary engine provided a sufficient radiating surface was supplied. It is also to be borne in mind that the same cool-



Relative Efficiencies, Horsepowers and Costs.

ing water for a gas engine may be used over and over again, so that the amount of water required has but little to do with the length of time the engine is run. It is quite different with the steam engine where the water rate is a certain amount per hour and is directly dependent on the length of time that the power is delivered. Consequently for a day's run the comparative amount of fuel and water required for the two plants would be entirely different from that shown in the diagram—which applies only to an hour's run.

The two diagrams, one showing the comparative coal consumption for each engine and the other treating of gasoline in the same manner, may also be read as the comparative cost for fuel for the two plants, since cost is directly proportional to consumption.

Probably one of the largest fields for the internal combustion motor is in plants where blast furnace gas is available. One of the diagrams will show the comparative power obtained from the same amount of this gas when used as a fuel for a boiler, and when applied to a gas engine, and the increase in power in favor of the latter is indicative of the economical use to which the combustion motor may be put. The cleaning of blast furnace gas required before passing it to a gas engine is a small item in comparison to the increase of power obtainable as compared with a steam plant.

From these diagrams it will be observed that the gas engine stands first in economy and efficiency in every case with the single exception of the cost of fuel when the steam engine uses coal and the combustion motor employs gasoline. In automobile practice where the flash type of steam generator is employed, the design of the power

plant has been brought to such a fine point that it is probable that the steam engine will deliver the same amount of power, gallon for gallon of gasoline, as will be developed by the gas motor, but this is a case where the steam engine is found at its best, and in stationary practice such a degree of economy in fuel utilization is seldom attained.

The Helwig Pneumatic Hammers.

Several new features are embodied in the pneumatic chipping, calking and riveting hammers as now made by the Helwig Mfg. Company, St. Paul, Minn. As advantages of the hammers the company lays particular emphasis on the simple valve mechanism, the absence of jar, and in consequence the easier operation, which

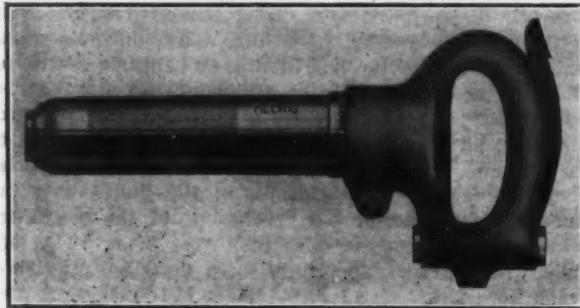


Fig. 1.—The Pneumatic Chipping Hammer Made by the Helwig Mfg. Company, St. Paul, Minn.

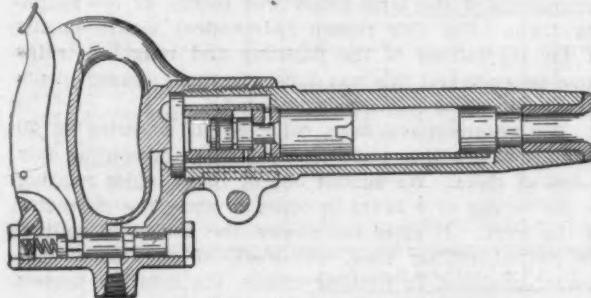


Fig. 2.—Sectional View of the Helwig Chipping Hammer.

increases the capacity of the operator, the use of less air to obtain given results, the ability to do given work at lower air pressure, and to operate the chipping hammer at a faster cutting speed (the speed can be regulated and also the force of the blow), and the hammer, which, because of its greater capacity, is shorter, may be used in close quarters. The hammers are arranged so that they will not operate unless the shank of the tool is in place. A simple locking device prevents the handle getting loose. There is also a point made of the fact that the hose connection is at right angles to the barrel of the hammer, which makes the handling of the hammer more convenient; there is not so much pull of the hose on the operator, and the hose, being out of the way, permits working in close quarters. There is also claimed to be a considerable saving of wear and tear on the hose, as well as on the threaded connections. The shape of the handle, it is stated, conforms to the natural grip of the hand so perfectly that it has been commented upon by users, who also seem to have a preference for the closed type of handle.

Fig. 1 shows an exterior view of the chipping hammer and Fig. 2 a cross section of it. This construction is typical also of the riveting or long stroke hammers, which are made, however, with either inside or outside triggers. The valve, as will best be seen from Fig. 2, is of balanced piston type and of relative large wearing surface. It is made of tool steel in one piece, hardened and ground, and as it operates in the same direction as the piston its wear is minimized and the full power of the air is available for effective work instead of being partially expended in overcoming friction. The valve chamber also is one piece, hardened and ground, and is firmly imbedded in the barrel, so that it cannot become

displaced except intentionally, being readily removable. The trigger is a one-piece steel drop forging.

The piston is a solid piece of tool steel also hardened and ground. The handle is drop forged and of a closed type, which, as before mentioned, is designed to conform to the grip of the hand. A simple locking device prevents the handle from getting loose, thus doing away with what is a frequent annoyance to users of pneumatic hammers.

It is declared that the hammer does not have a hard metallic blow, as a consequence of which there is less fatigue to the user, so that the hammer may be operated continuously for longer time. This, with the greater capacity of the hammer, its economy in the use of air and its other advantages, are considered by the manufacturer to mark a considerable advance over former types.

The riveting hammer delivers a sharp, powerful, speedy blow, which, it is claimed, insures tighter rivets in less time at lower cost than usual. The chipping hammer has a faster cutting speed than commonly, and as this speed can be regulated, as well as the weight of the blow, it also is claimed to be a more than ordinarily convenient and efficient tool. The 4-in. stroke chipping hammer equipped with the rivet set will drive $\frac{3}{4}$ -in. rivets steam tight.

The chipping, calking and beading hammers are made in six sizes, ranging from $\frac{1}{2}$ to 5 in. stroke. The riveting hammers are made in nine sizes, with 1 1-16, 1 3-16 and 1 5-16 in. bore and 6, 8 and 8 in. strokes for each diameter of bore.

The American Electrochemical Society's May Meeting.

It now seems highly probable that the May meeting of the American Electrochemical Society, to be held in Niagara Falls on May 6, 7 and 8, will go down in history as the most enthusiastic and satisfying convention of electrochemical and metallurgical interests ever held. Because of the fact that one day is to be devoted to electro-metallurgical subjects, unusual interest is being displayed by men connected with that line of research, both in this country and throughout Europe. American workers in the field indicated will have pleasure in meeting some notable foreign workers, and the fact that the convention is to be held on Canadian soil affords the intimation that these large interests at home and abroad will come together, as it were, on neutral soil.

In addition to the valuable papers previously announced, the information is given that word has been received from Ch. Albert Keller, Ste. des Establissemens Keller-Leleux, Paris, France, saying that he will contribute a paper. Cav. Ernesto Stassano, Forni Termoelettrici Stassano, Turin, Italy, will also contribute a paper, and expects to be present at the meeting in person. Paul Girod, Société Anonyme Electrometallurgique, Ugine, France, has given further information as to the nature of his paper, which will apparently be largely devoted to an illustrated description of the new steel works at Ugine. This plant will probably be in operation in April. The installation includes two furnaces of 12½ tons capacity, two furnaces of 2½ tons capacity, two rolling mills, a large forge and a steel molding shop, the whole installation being exclusively worked by electricity.

The number of boiler explosions in the United States in 1908, as reported by the Hartford Steam Boiler Inspection & Insurance Company in the *Locomotive*, was 470. This number compares with 471 in 1907, 431 in 1906, 450 in 1905 and 391 in 1904. The number of persons killed by boiler explosions in 1908 was 281, against 300 in 1907, 235 in 1906, 383 in 1905 and 220 in 1904. The number of persons injured, not fatally, in 1908 was 531, against 420 in 1907, 467 in 1906, 585 in 1905 and 394 in 1904. A record of boiler explosions in the United States kept by the *Locomotive* for 41 years and 8 months, or since October 1, 1867, shows a total of 10,051, in which 10,884 persons were killed and 15,634 persons were injured.

POWER REQUIREMENTS IN ROLLING STEEL.

The Results of the Investigations of a Special German Commission.

There have just been made public the first results of a really stupendous undertaking carried out with scientific accuracy to determine the power requirements of rolling mills. The first fruit of the labors of a German commission has been brought before the Verein deutscher Eisenhuettenleute by Director H. Ortmann of Voelklingen. Three years ago Mr. Ortmann read two papers on rolling mill practice before local societies of steel makers at Saarbruecken and at Metz, which led an

publish it in a special volume. Ortmann's paper presents only the principal features.

The experiments were carried out on six electrically driven trains, two of them double two-high trains for bars, two three-high mills for rolling mine rails and two reversing mills. Of the latter one was a blooming mill, while the other had stands also for rolling beams and rails. The paper describes in detail the apparatus and methods adopted for making the measurements which applied to both alternating and direct current motors.

It was comparatively simple to measure the fluctuations in the revolutions in direct connected mills. But if the mill consisted of a roughing and a finishing train and there was a connection by rope or belt drive between the two then slip had to be taken into account. It is particularly the roughing train in which the rotating masses contribute a very large share of the work, and at the same time there must be checked by braking a considerable moment of inertia in the finishing train during the decline in the revolutions of the roughing train and this must be done in a very brief period of time. In all cases, therefore, there must be a considerable rope slip.

The same phenomenon appears when the finishing train is under load and the roughing train is empty. Then, too, the ropes will not be able at once to affect the revolutions of the large amount of inertia of the roughing train. For this reason independent measurements of the revolutions of the finishing and roughing trains must be made and this was done. In these measurements a rope slip up to 8 meters was found.

The results have been collected in a series of 70 tables, which will be published, the paper presenting only a few of them. We submit one of these tables relating to the rolling of a beam in order to show the character of the work. It gives the passes, the pauses in rolling, the actual rolling time, the work of the motor, the power consumed in running empty, the rotating masses and the energy absorbed or delivered by them.

There is entered also a quotient,

$$\frac{V}{E} = \frac{(Q' - Q^2) \times L q'}{\text{net work of rolls in making}}$$

Q' is original section before pass in square millimeters.

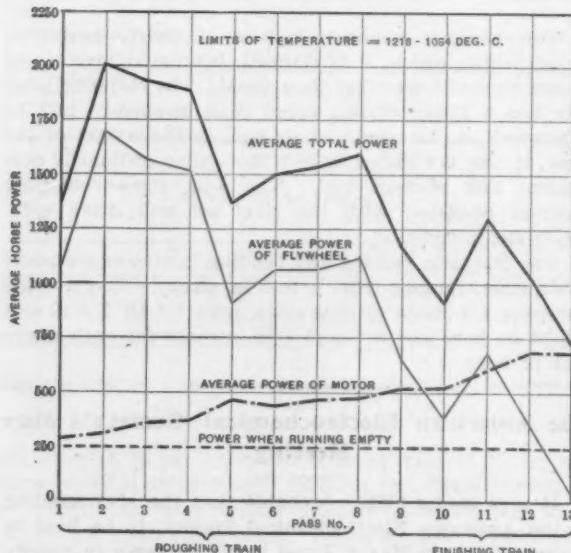


Fig. 1.—Participation of Rotating Masses in Rolling Work.

engineering student, Dr. J. Puppe, now of Dortmund, to investigate the power requirement of rolling mills, at the suggestion of Professor Mathesius, and backed by the Siemens-Schuckert Works. Later the Verein deutscher Eisenhuettenleute was approached and appointed a commission consisting of P. Dreger, Ph. Fischer, Frantzen, Fr. Froelich, L. Grabau, O. von Kraewel, M. Kueper, Dr. P. Lueg, K. Maleyka, Prof. W. Mathesius, H. Ortmann, O. Pilz, K. Rein, W. Schnell, Dr. E. Schroedter

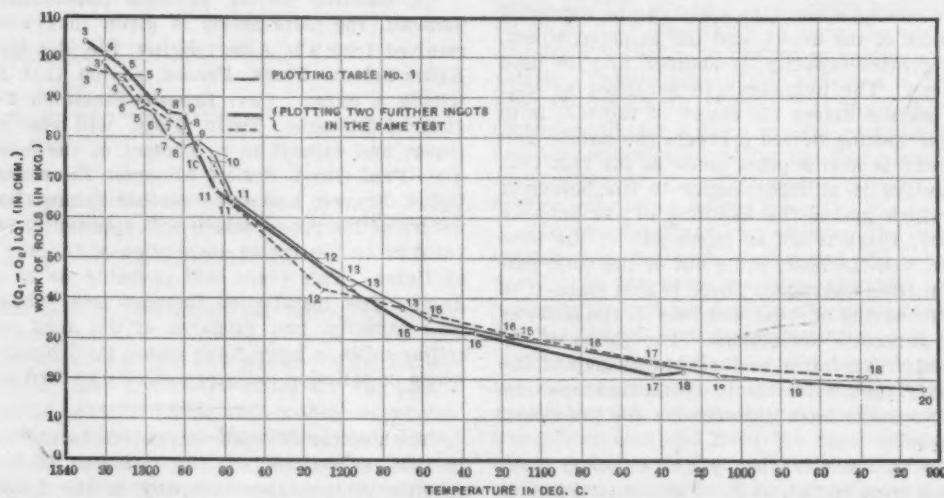


Fig. 2a.—Rolling Flats of 38 x 7 Mm. on Double Two-High Train.—Basic Bessemer Steel, 40 Kilos Tensile Strength. Weight of Bar, Roughing Train, 116 Kilos. Weight of Bar, Finishing Train, 113.8 Kilos. Power, Roughing Train, Running Empty, 36 Hp. Power, Finishing Train, Running Empty, 90 Hp.

and Dr. O. Peterson. This commission decided to limit the investigation to the power requirements of the passes for different shapes with due consideration of the temperature and the mechanical qualities, and to exclude the question as to the most suitable motive power, since it could not be decided on general lines. The material accumulated appears to have been enormous, about 200,000 calculations having been made, and it has been decided to

Q^2 is the section after pass in square millimeters.

$L q'$ is the length in millimeters of bar corresponding to section Q' .

V is the displaced volume in square millimeters.

E is the energy in meter kilograms.

Besides there are presented the section after every pass, and the temperature, measured by a Warner pyrometer, after every pass.

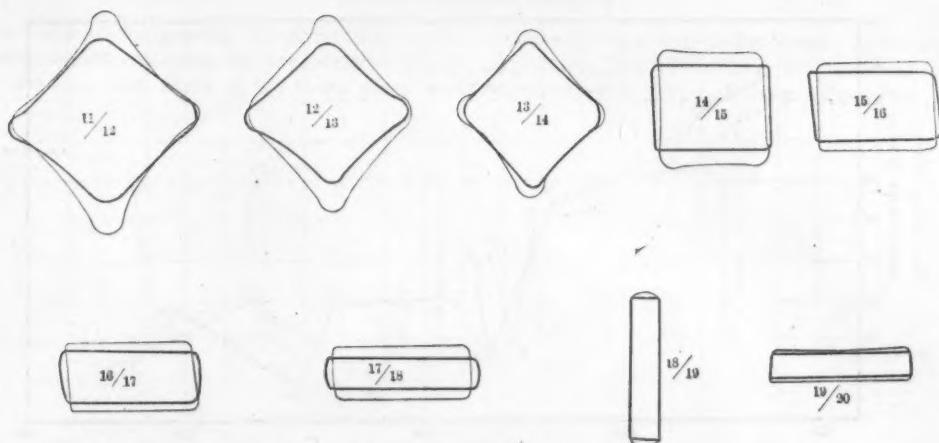


Fig. 2b.—Sections of the Eleventh to the Twentieth Passes, Rolling Flats.

The series of tables make it possible to study the conditions of working during the rolling, and it is possible to determine the total work as well as the amounts to be deducted.

Special attention should be given to the participation of the rotating masses in percentages of the total net work of the rolls.

This is shown very well in the curve in Fig. 1, in

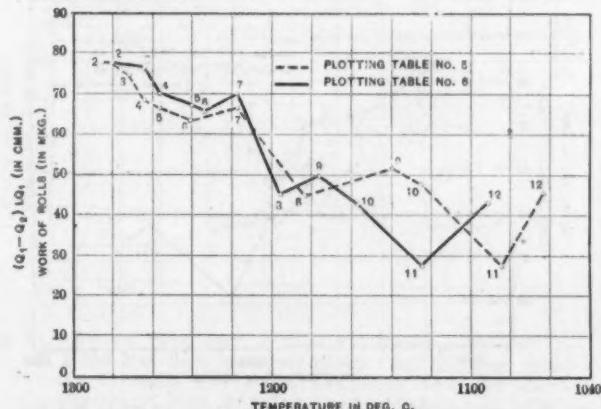


Fig. 3a.—Rolling 35 Mm. Rounds from 125 to 130 Mm. Squares, about 0.84 M. long, on Double Two-High Train.—Weight of Bar, Roughing Train, 146 Kilos; Finishing Train, 142.1 Kilos. Open Hearth Blooms of 55 to 60 Kilos Tensile Strength. Passes 1 to 7 Roughing, 8 to 12 Finishing. After Seventh Pass Crop Weighing 3.9 Kilos. Power Consumed Running Empty, 170 Hp.

which are plotted the line of power consumed in running empty, the line of average power delivered by the motor, the line of the average power delivered by the rotating masses and the line of the average total power. It will be observed that the power delivered by the motor begins with very low values and gradually rises to the last pass, while the power delivered by the rotating masses is very high after the first pass and declines slowly at

first, and rapidly toward the end. At the last pass the power delivered drops to nearly zero, so that the motor takes over the entire work. This shows that in the case of longer passes the rotating masses not alone do not deliver more energy but often offer some resistance. They do come into full play in a short pass and are of use. The value of rotating masses is, therefore, very different according to the layout of the work of rolling. In some cases they operate very usefully, in others they are injurious; this must determine the magnitude of the rotating masses.

Referring again to the quotient $\frac{V}{E}$, or the volume displaced, divided by the energy consumed, it may be doubtful whether it is entirely free from objection, since it is possible that a quotient may be established in some other way which establishes the relation between the energy and rolling work. But the quotient chosen yields curves based on the values in the tables, with the corresponding temperatures which are fairly regular, a proof that it is practically useful. It has been retained chiefly because it is easy to determine the volume.

The paper presents a series of tables showing the results in detail, accompanied by diagrams in which the quotient has been plotted for every pass as the ordinate, and the corresponding temperature as the abscissa. The curves thus obtained show at a glance how many cubic millimeters of steel have been displaced per meter kilogram of energy at a given temperature. The sections for a number of passes are also given.

Thus Fig. 2 shows that at a temperature of 1300 degrees C. 90 c. mm. of material can be displaced, while at 1100 degrees only 30 c. mm., and at 950 degrees only 20 c. mm. can be displaced.

Fig. 1 shows a fine line, dropping rapidly at higher temperatures, but flattening more and more. At higher temperatures a drop of 20 degrees brings about quite a notable change in the effect produced per meter kilogram, while at lower temperatures such minor changes possess little influence. In rolling out this bar only direct pres-

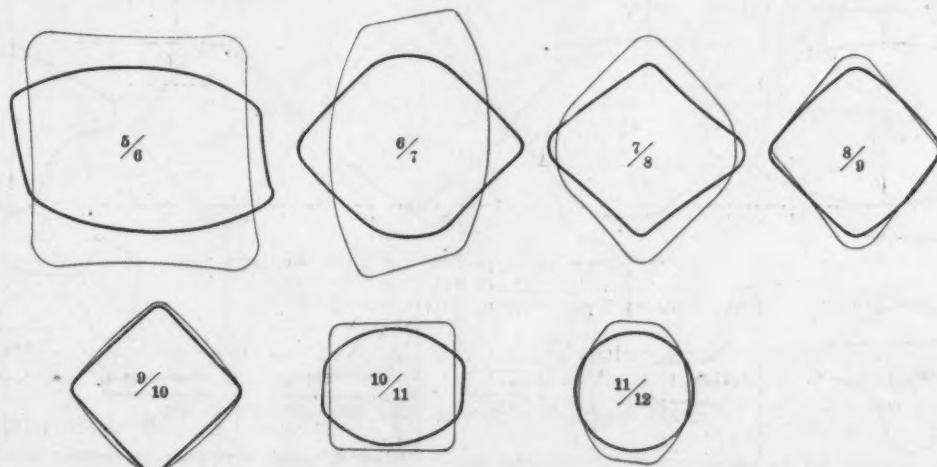


Fig. 3b.—Sections of Fifth to Twelfth Passes, Rolling 35 Mm. Rounds.

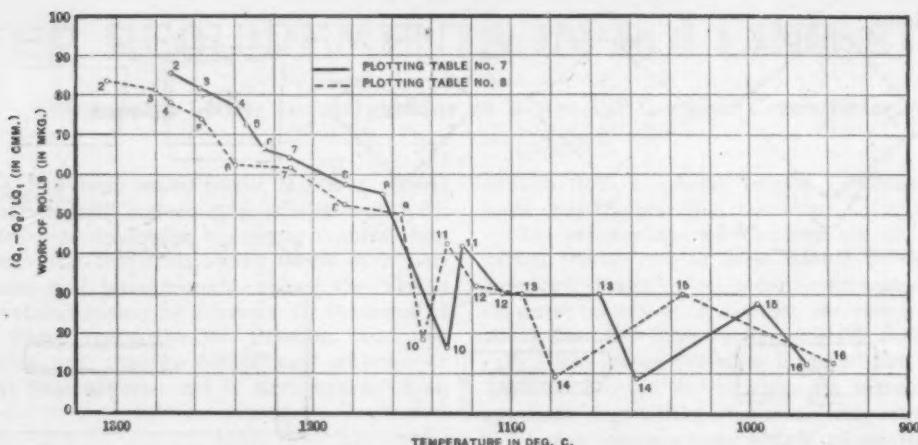


Fig. 4a.—Rolling 35 x 35 x 4.5 Mm. Tee on Double Two-High Train from 130 Mm. Square Basic Bessemer Bloom of 37 Kilos Tensile Strength. Bloom About 0.53 M. Long; Weight, Roughing Train 72 Kilos, Finishing Train 65.9 Kilos, Crop Ends 6.1 Kilos. The First Seven Passes in Roughing Train, 8 to 11 in Finishing Train.

sure was exerted, so that the displacement of the particles has been chiefly in the longitudinal direction of the bar. In this case the curve directly shows the decline in the capacity for being shaped of the material with the falling temperature.

In the investigation of the power requirements it was important to study first such sections which require the displacement of material only in one direction, and did not call for spreading because that introduced entirely different conditions. The influence of the more difficult sections upon the consumption of power may be now considered. Fig. 3 shows two curves for rounds. Here the eleventh pass exhibits an unusually low position of the quotient point. The reason is that this was an oval pass and the next a round pass. From an observation of the sections it will be noted that the form led to a considerable spreading and to a displacement of the material in a direction at right angles to the bar, consuming a certain amount of power without contributing much to the reduction of area of the section. Yet the position of the eleventh pass is relatively advantageous since to a certain extent the spreading was natural. But if the spreading becomes very large through the form of the groove like in Fig. 4, for a tee, pass 10, and if at the same time there takes place a considerable change in cross section, then a very large consumption of power becomes necessary. The low position of the curve point 10 shows this. The succeeding passes 11, 12 and 13 show a relatively advantageous position, while 14 and 16 are again unfavorable.

The natural spreading of the material in consequence of the pressure has little influence if the sidewise widening can proceed unimpeded. But if the spreading is impeded by the rolls then a more or less notable lateral friction takes place between the bar and the rolls, which naturally must cause losses of energy. This is the case with the sixteenth pass in Fig. 4, which in the diagram

shows a very small amount of work done for the power expended. Such discrepancies between the amount of energy expended always imply an adverse effect on the life of the rolls. The quotient curves show this plainly, and they should be plotted for every set.

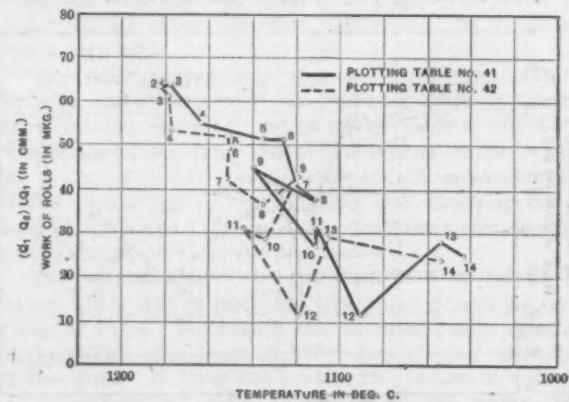


Fig. 5a.—Rolling Mine Rails Weighing About 46 Kilos Per Running Meter from 130 Mm. Square, 0.89 M. Basic Bessemer Steel of 68.5 Kilos Tensile Strength, 15 Per Cent. Elongation, 40.2 Contraction of Area.—Analysis: C, 0.408; Mn, 0.488; P, 0.077; Si, 0.022; S, 0.044 Per Cent. Blooming First to Fifth Passes, First Stand Finishing Sixth to Tenth, Second Stand Finishing Eleventh and Twelfth, Third Stand Finishing Thirteenth and Fourteenth. Power Running, Empty, 380 Hp. Three-High Mill.

In Fig. 5 the low, and therefore bad, position for the twelfth pass is striking, while the preceding and succeeding passes are relatively favorable. The explanation is readily furnished by the accompanying sections. It will be noted that in consequence of the magnitude and character of the pressure a considerable lateral movement must occur in the twelfth pass, which, however, must be

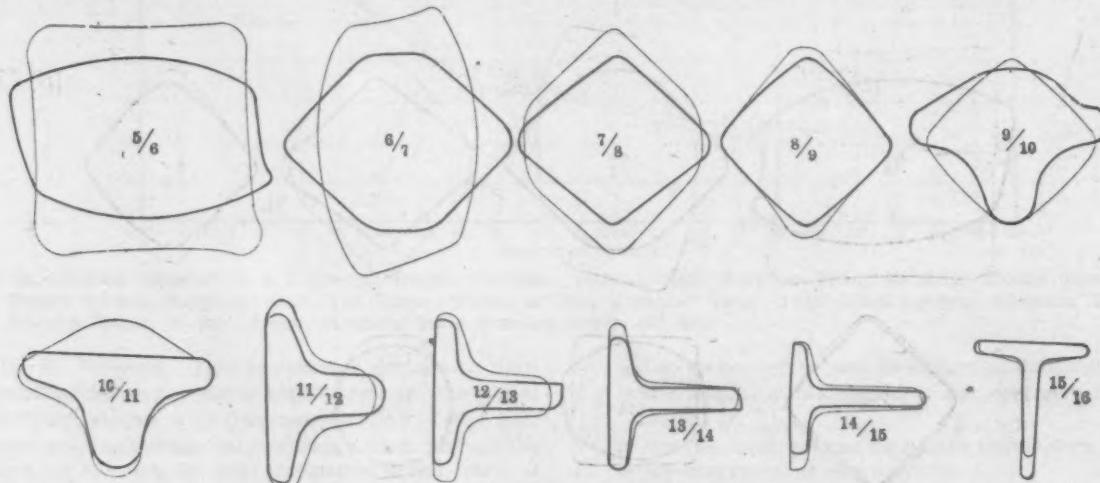


Fig. 4b.—Sections of Fifth to Twelfth Passes, Rolling 35 x 35 x 4.5 Mm. Tees

limited by the walls of the groove. Considerable losses by friction must result. Besides an unfavorable effect grows out of the fact that there is too much material

cases mine rails were being rolled. In the case of shaping passes the line connecting the different points plotted should yield a curve as even as possible, which can be

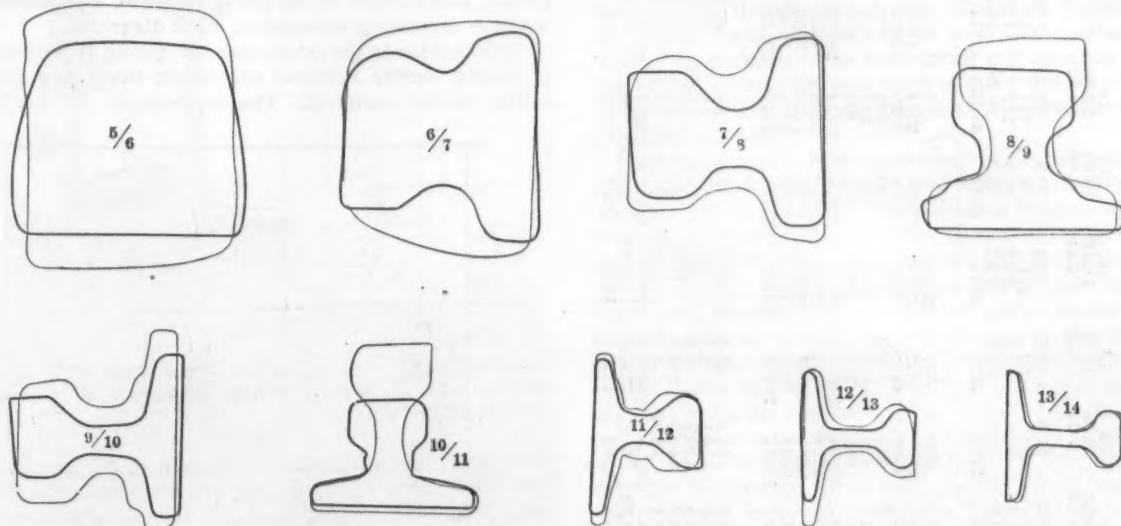


Fig. 5b.—Sections of Fifth to Fourteenth Passes, Rolling Mine Rails.

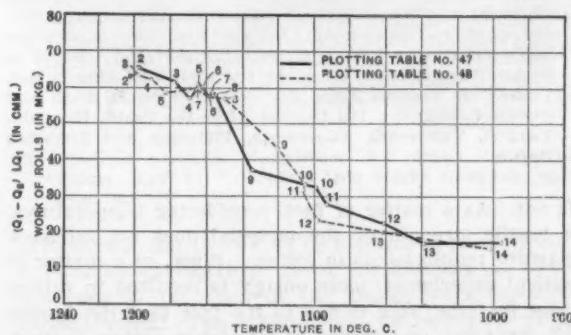


Fig. 6a.—Rolling Mine Rails, 8 Kilos Per Running Meter, from 162 x 156 Mm. Basic Bessemer Bloom 1.015 M. Long.—Steel Tensile Strength 66.8 Kilos, Elongation 14.7 Per Cent., Contraction of Area 38.9 Per Cent. Analysis—C, 0.316; Mn, 0.448; P, 0.07; Si, 0.016; S, 0.056 Per Cent. Roughing Train, First to Seventh Pass; First Stand Finishing, Eighth to Tenth; Second Stand, Eleventh and Twelfth; Third Stand, Thirteenth and Fourteenth. Power, Running Empty, About 300 Hp. Three-High Mill.

which increases the effect of friction and indirect pressure.

The position of such passes with indirect pressure must always be unfavorable, as compared with direct pressure only. The effort of the designer should be to distribute as much as possible favorable and unfavorable

attained without too much difficulty. This is confirmed in looking over the numerous diagrams of the original report.

On the other hand, the designer is in a position to make such a curve for shaping passes as favorable as possible, and having the points high, even though they be less favorable than curves representing direct pressure only. This can be done by avoiding indirect pressure as much as possible, and to lessen it where it cannot be avoided by skillful shaping of the grooves. For instance, this may be attained by adopting to cutting in to the material, by increasing the conicity of the roll edges and by systematically avoiding indirect pressure in shaping a series of rolled products like angles, channels, angles and railroad ties. The latter sections may be produced, avoiding indirect pressure almost entirely by rolling them flattened out as much as possible and turning up only in the last pass. In that way the consumption of power is lessened, a maximum reduction of area is attained and the life of the rolls is lengthened because there is not so much useless waste of energy through lateral friction.

A very striking example for the wretched relation between energy exerted and results obtained in rolling is exhibited in Fig. 7, pass nine. In the two experiments the average quotient $\frac{V}{E}$ for this ninth pass is 16, while the figure for the adjoining passes is about 58. In other words, this pass is three and one-half times as poor as

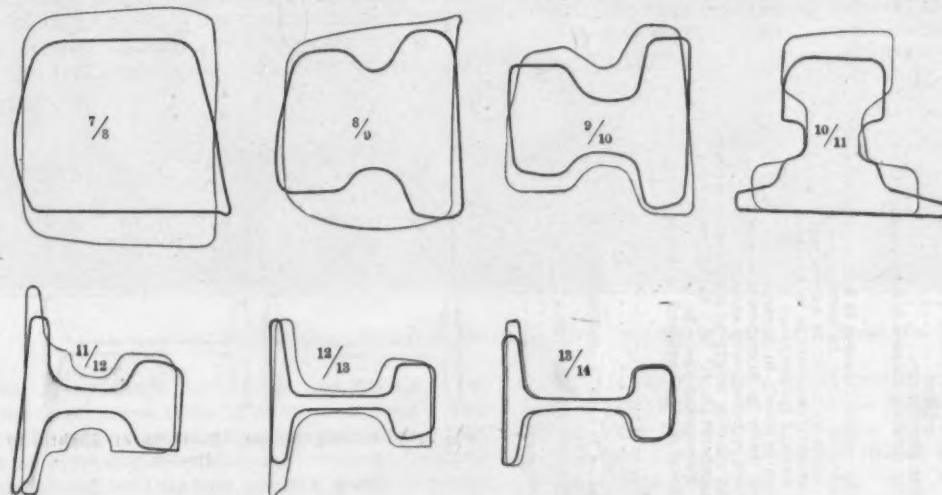


Fig. 6b.—Rolling Mine Rails, Seventh to Fourteenth Passes.

points in succeeding passes so that the curve is fairly uniform, as in Fig. 6. In this diagram there are no such jumps as in Fig. 4. From the standpoint of power consumption the work has been better, although in both

the capacity of the material at the temperature would admit of. The reason will be understood from the sections of passes eight and nine. It will be realized that the sharp cutting into the bloom subjected the material

Rolling Beam, Standard Section No. 22, Weighing 36 Kilos Per Running Meter (See Diagram, Fig. 7).											
Number of pass.....	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Total.
Time rolling pass, seconds.....	2.79	2.26	3.24	3.88	4.18	4.12	4.53	5.95	5.94	6.20	12.12 111.43
Pause in rolling.....	7.63	9.25	7.40	9.25	7.24	10.70	7.26	31.20	14.40	7.15	165.14
Revolutions per minute.....	12.9	15.8	14.6	23	13.8	185	11	15.8	4.8	28.8	14. Total.
Maximum.....	50.6	61.4	43.6	41.2	61.6	44.2	69.8	74.	76.4	17.8	276.57
Average revolutions per minute.....	29.2	28	21.4	28.4	25.5	27	31.2	26.7	60.6	20.5	117.117
Average revolutions per minute.....	891	890	639	436	920	855	1298	603	2033	1811	1900 2268 2230 49665 4972 38964
Energy absorbed by rotating masses in horsepower seconds.....	1064	1370	1003	1408	1362	1428	1458	2320	2676	478	7086
Average energy taken by motor in horsepower seconds.....	1073	2078	2312	1950	2705	2316	2875	2838	4270	4115	27878
Maximum energy taken by motor in horsepower seconds.....	2081	244	462.5	812	313	492	344	361.5	390	311.5	214. Total.
Average loss of current temperature in horsepower.....	165	422	750	490	564	124	128	124	670	564	411. Total.
Maximum loss of current temperature in horsepower.....	176	278	422	750	835	492	344	564	670	476	320. Total.
Average power running empty in horsepower.....	136	132	100	132	124	124	124	124	178	909	322. Total.
Average power running empty in horsepower.....	2018	3471	4448	5890	5615	6461	825	13688	15418	281	392. Total.
Energy taken from motor in horsepower seconds.....	890	890	630	436	920	656	627	603	2033	1811	241262
Work performed in horsepower seconds.....	380	430	324	612	618	627	726	726	1056	1620	4170
Work performed in running empty in horsepower seconds.....	460	795	1498	1220	1400	1290	956	2115	2318	1780	5060
Loss of current temperature (°W.) in HD seconds.....	1187	1256	1987	1722	2052	2943	3545	5082	8361	10.66	15406
Net rolling work, horsepower seconds.....	1187	1256	1987	1722	2052	2943	3545	5082	8361	10.66	15406
Participation in total energy assumed by motor taken, in per cent, by:											
Rolling work.....	40.7	39.1	44.0	44.4	51.8	52.5	54.0	59.6	60.8	66.5	68.5
Acceleration work.....	30.6	25.6	14.4	11.2	16.0	16.2	20	7.08	14.8	0.8	7.4. Total.
Running empty.....	1356.1	1177.3	1004.25	820.6	704.9	573.3	507.19	374.96	350	205.6	19. Total.
Cross section of piece in square centimeters.....	1.379	1.50	1.87	2.28	2.654	3.264	3.685	4.985	5.345	6.85	16. Total.
Length of piece, meters.....	12340	24656.5	27514.9	32942.5	26379.6	36399.0	21909.5	47715.7	12462.5	41049.6	49816.8
Volume displaced, cubic centimeters.....	138.8	224.5	184.5	206.5	116.2	165.5	165.5	182.4	126.2	88.75	33.35
Temperature, Centigrade.....	1190	1190	1183	1176	1169	1167	1146	1139	1126	1145	1110 1091 1083 1073 1063 1053

to a powerful sidewise spreading and to forcing it against the side walls. The curve, furthermore, shows an increase in temperature during the tenth and eleventh passes, as the result of the heavy pressure, a phenomenon which is frequently repeated in other diagrams.

The opinion is prevalent that the power requirements in rolling harder material are larger than they are in rolling milder material. The experiments do not bear

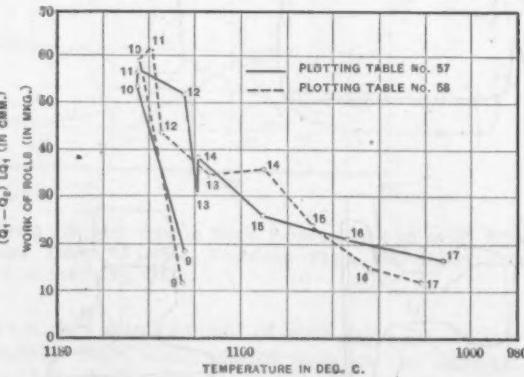


Fig. 7a.—Rolling Beams No. 22, Weighing About 36 Kilos Per Running Meter, from Open Hearth Ingots 400 Mm. Square Bottom, 360 Mm. Square Bottom, 1.294 M. Long.—Finishing Weight, 1467 Kilos. Steel 43.5 Kilos Tensile Strength, 52.5 Per Cent. Contraction of Area, 26 Per Cent. Elongation. Analysis: C, 0.13 Per Cent.; P, 0.042 Per Cent. Rolled in Eight Blooming, Five Roughing and Four Finishing Passes. Turned 90 Degrees After the Second, Fourth, Sixth and Eighth Passes, and 180 Degrees After the Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth and Sixteenth Passes.

this out. As a matter of fact, considering temperatures, the tensile strength of the material does not influence the power requirements in rolling. Since, as a matter of practical experiment, more energy is required in rolling harder material, this is due to the fact that the harder steel, must not, on account of its higher carbon content, be heated as highly, and must, therefore, be rolled at a lower temperature. At such lower temperature the hardness of the material plays an important part, and the

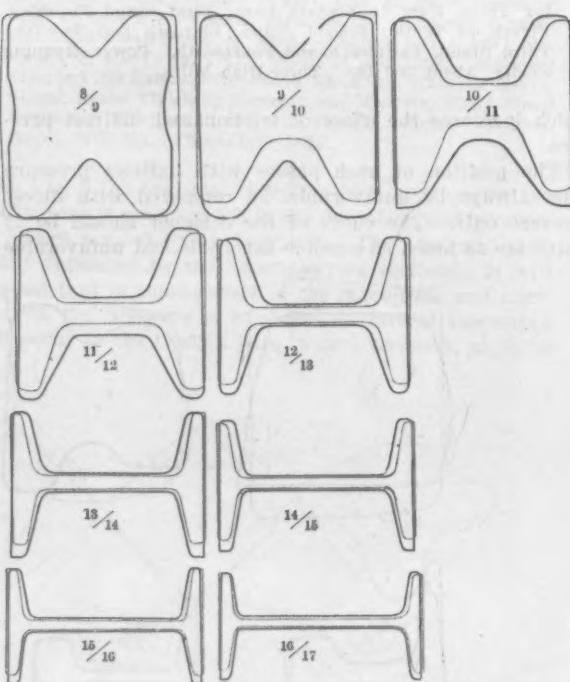
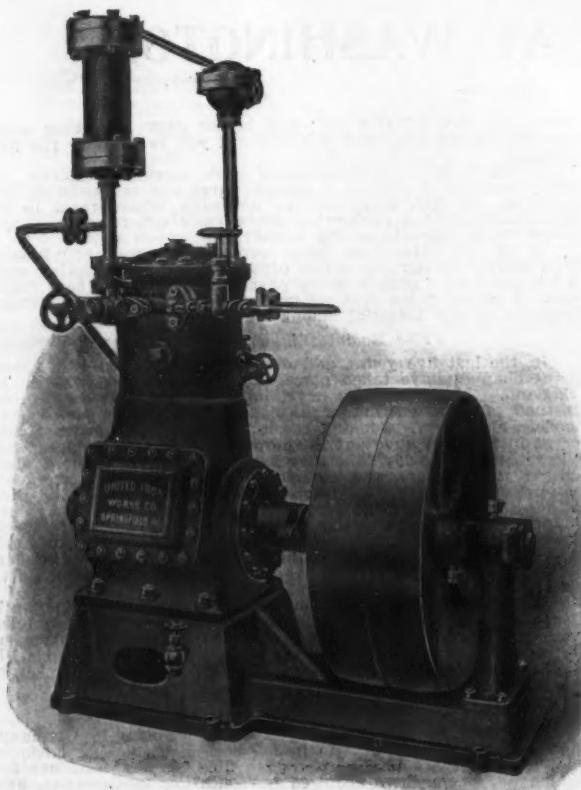


Fig. 7b.—Rolling Beams.—Sections of Eighth to Seventeenth Passes.

resistance of the harder steel rises more rapidly with declining temperatures than it does with mild steel, so that bands made of hard steel require much more power in the polishing pass than soft iron.

The report refers to the consumption of power in starting and speeding up reversing mills. The experiments



The Sterling Ammonia Compressor for Small Refrigerating Plants, Built by the United Iron Works Company, Springfield, Mo.

have shown that there may be a waste of power which is not usually appreciated. Alone for speeding up, 10 to 12 and even 17 per cent. of the energy were required in normal work. The consumption of power in running empty at higher speeds is great, with reversing mills. Thus mill No. 1 required 160 hp. at 30 rev. per min. and 400 hp. at 70 revolutions, while mill No. 2 absorbed 145 hp. at 30 revolutions and 590 hp. at 120 revolutions. Speeding up No. 2 mill from rest to 120 revolutions re-

A Small Sterling Refrigerating Plant.

The Sterling ammonia compressor here illustrated is built by the United Iron Works Company, Springfield, Mo., which makes a specialty of small ice making and refrigerating plants. The ideal small refrigerating plant is one that will do efficient work without the services of an attendant, and with as little actual operation of the machine as possible.

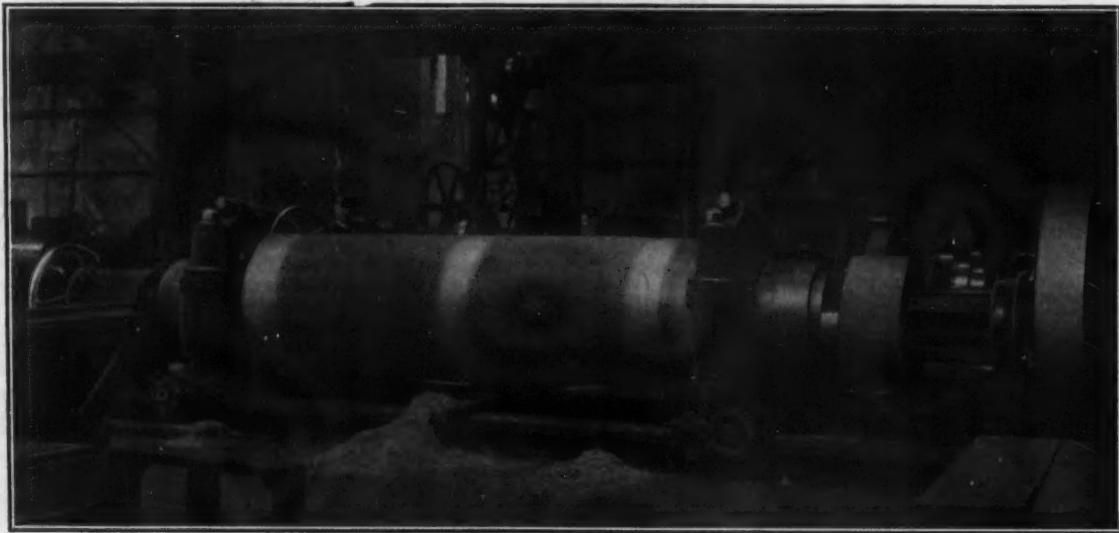
The Sterling machine is claimed to be the only ammonia compressor on the market that requires no attendant. It is complete in its self-oiling system, and all working parts are inclosed. No adjustment, it is stated, is ever required after the machine leaves the factory, and no stuffing boxes are used on piston rods and no cross head between crank shaft and piston heads. The suction valves are located in the piston heads, and the discharge valves are the full cylinder size and in reality actually serve as cylinder heads. This means that the compressor pistons are adjusted with practically no clearance, and that practically 100 per cent. efficiency is secured. If a nut, scale, or ammonia liquid finds its way into the cylinder no damage, it is said, results to the machine, the discharge valve simply lifting higher from its seat and allowing it to pass out.

This machine can be operated on wet or dry gas, and can be left running indefinitely with no attendant around and with perfect safety.

The Largest Chilled Roll.

What is claimed to be the heaviest chilled roll in the world is now being finished in the machine shop of the A. Garrison Foundry Company, Pittsburgh, Pa. It is 42 x 152 in. and measures nearly 20 ft. over all. The illustration shows this roll during the process of turning. With several others it fills an order from the Otis Steel Company, Ltd., Cleveland, Ohio, where it will be used for rolling steel plates over 12 ft. wide. The previous largest chilled roll was made by the same manufacturer for the Worth Brothers Company, Coatesville, Pa., but the above mentioned is slightly heavier, weighing 71,000 lb.

The A. Garrison Foundry Company was established in 1803 and began the manufacture of chilled rolls in



A 42 by 152 In. Roll Being Turned by the A. Garrison Foundry Company, Pittsburgh, Pa.

quired 5800 hp. without performing any rolling. For speeding up to 60 revolutions 1350 hp. was used. This shows that the rapid starting or rapid accelerating of the masses in a reversing blooming mill without flywheel must be condemned because this means a waste of energy and particularly because great speed in blooming is not advantageous in proportion to the short passes and the long pauses between passes, and does not bear a relation to the increased capacity of the rolls. It is of course different in rolling finished material when the rolling lasts longer and the pauses become relatively shorter.

1824. Its records show the largest at that time to have been about 12 in. in diameter and weighing about 535 lb. These were the first chilled rolls made in America, as before that time the few small chilled rolls used in this country were imported.

The new steel freight steamer E. J. Buffington was launched at the Lorain, Ohio, yards of the American Ship Building Company, March 6. It is 605 ft. long and is one of four vessels of that unusual length which the Pittsburgh Steamship Company has under construction.

TARIFF TESTIMONY AT WASHINGTON.

The Ways and Means Committee of the House of Representatives continues to receive statements from manufacturers and others interested in the approaching revision of the tariff. The following have been selected as having a special bearing on the iron and allied trades, the first being a statement by President Samuel M. Nicholson, Nicholson File Company, supplemental to his testimony before the committee which was published in *The Iron Age* of January 21:

FILES.

From President Samuel M. Nicholson, Nicholson File Company, Providence, R. I.

Owing to the fact that I was not advised, and, therefore, could not be adequately prepared, for the particular line of inquiry your honorable body intended pursuing at the hearing of January 15, regarding the file industry, and believing that the testimony there deduced is not as convincing as the actual facts warrant of the contentions set forth in my brief, now on file, I beg leave to file the following supplemental brief and ask for it your most earnest consideration:

1. Permit me, for your fuller information, to call your attention to the importations of files and rasps since 1893, as set forth herewith:

Imports of Files, File Blanks, Rasps and Floats (Dutiable).

Years.	Value.	Years.	Value.
1893.	\$76,356	1901.	\$59,779
1894.	36,800	1902.	72,293
1895.	65,594	1903.	82,485
1896.	64,226	1904.	67,812
1897.	47,407	1905.	87,292
1898.	35,344	1906.	59,708
1899.	42,760	1907.	86,652
1900.	59,707		

2. A list of the most prominent machine makers of files and rasps in the United States is also hereto attached, with no one of whom has any of the representatives of the Nicholson File Company, to my knowledge, in any way had any communication regarding the question of tariff. Neither has this company any trade agreements with any of them relative either to domestic or foreign business other than that entered into November 1, 1899, when a uniform selling list was adopted, which in no wise governs or affects discounts or net selling prices. No concerted action has ever been taken in fixing discounts from this list or terms of sale, all of which each manufacturer establishes independently for himself. Those marked with an asterisk are known to seek foreign fields and to market abroad a portion of their product direct. It should not be difficult to ascertain from any of these makers whether or not the present profit on their net investment is, in your opinion, of a reasonable or unreasonable amount.

*H. Disston & Sons, Inc., Philadelphia, Pa.
*McCaffrey File Company, Philadelphia, Pa.
Liveright Brothers, Philadelphia, Pa.
*Heller Brothers, Newark, N. J.
Madden File Company, Middletown, N. Y.
Simonds File Company, Fitchburg, Mass.
F. Westfahl & Co., Milwaukee, Wis.
A. Bickhaus & Co., Quincy, Ill.
Carver File Company, Philadelphia, Pa.
American Swiss File & Tool Company, Elizabeth, N. J.
Rex File Company, Newcomerstown, Ohio.
Colonial File Company, Boston, Neponset, Mass.
Troy File Works, Troy, N. Y.
Chicago File & Rasp Company, Chicago, Ill.
Stokes Brothers Mfg. Company, Freehold, N. J.
McClellan File Company, Cleveland, Ohio.
Hays File Company, Detroit, Mich.

3. Although the manufacturers marked with an asterisk are known to do an export business, they depend to such an extent upon the New York export commission houses that they may not be in possession of reliable or comprehensive information regarding the standing of foreign competition and its ability to produce cheaply and in large quantities, and hence may not be able to accurately judge of the effect upon the capital and labor similarly employed in this country were tariff reductions to open the door to domestic competition.

4. As indicative of the trend of foreign conditions affecting the demand for American-made files, I beg to call your attention to data gathered from our correspondence, which, with brief explanatory detail, are set forth as follows:

File Business in Japan.

About seven or eight years ago the duty on files imported into Japan was 5 per cent. ad valorem. This has been increased from time to time until it is now 20 per cent. Under these changed conditions the manufacture of files in Japan has increased very largely, and whereas a few years ago there were only a very few small shops in that country making files there are now several shops of considerable size engaged in this industry, employing from 100 to 500 hands each. With the extremely low wages prevailing in Japan files can be made in that country at such a cost that it is becoming practically impossible for us to compete for business there. In the year 1906 our sales to Japan amounted to about \$60,000 net; in the year 1907 they

were just over \$10,000 net; and in the year 1908 they were less than \$1200 net. We therefore ask you to consider the following:

1. The Japanese manufacturers' home market is limited. 2. Their capacity to produce is already large and is constantly increasing. Finally, what can we naturally expect them to do with their surplus production when their other products are found in all markets of the world?

In his last letter from Japan our salesman writes: "I have been unable during my entire present trip to accomplish anything here; all attempts on my part to sell files have been fruitless. I do not think that we may expect from Japan in future business of any material amount."

File Business in Great Britain.

In the last five years, and especially in the last two years, great changes have taken place in the manufacture of files in England. Many makers have largely discontinued the old method of hand cutting of files, and have put in thoroughly modern machinery. Some of the largest and most powerful concerns in Sheffield have put in thoroughly up to date plants, and the results are to-day that they have very largely reduced their cost of manufacture, and we frequently find that they are quoting prices that we cannot meet. It must be borne in mind that in addition to having the advantage of these new and up to date plants Sheffield makers have the great advantage of very much lower wages than those prevailing in this country. Our business in Great Britain is, therefore, falling off; and we frequently find that Sheffield makers are underquoting us in other parts of the world.

Extract from letter from our direct representative in South America, dated Valparaiso, December 2, 1908: "I have to advise you that at the present time there is in Valparaiso a big competition in our line, but it is not with Disston's files but with English files, which are pushed very hard and offered at better discounts than ours."

File Business in Germany.

For some years we have been doing business in Germany, but in the last year or two it has been a decreasing business and is limited practically to certain files for a special use for which our goods have acquired a reputation in Germany, and under present conditions we cannot hope to long retain this. It is significant that in kinds of files for other uses we cannot do business there, and the kinds in which our business consists constitute a very small percentage of the total file consumption of Germany. In all these kinds in which we fail to secure trade German makers supply files of a quality satisfactory to consumers at considerably lower prices than we can supply them, and this in spite of the fact that the duty on files in Germany is a very low one.

The competition from German makers is illustrated by the following extracts from a letter just received from our direct salesman, dated Shanghai, December 19, 1908. This relates to business in the Philippine Islands: "S. & Z. Manila. It is interesting to learn that they have registered their brand in America. As a matter of fact, practically all of the files of this brand, which they import from Germany, are 10, 12, 14 and 16 in, flats and half rounds, and they sell them to Chinese dealers at prices 25 to 33½ per cent. below the equivalent of 70 per cent. off the sterling list (70 per cent. is the price which we allow to importers in Manila). In view of the big difference in price, it is apparent that we cannot get their trade in large files." S. & Z. are one of the largest importers of files in the Philippine Islands.

This indicates the great strength of the competition which we are now getting from German makers in markets where both our files, and German files have to pay the same duty. This is true, not only of the Philippine Islands, but of markets in South America, various countries of Europe and elsewhere. It also indicates what might be expected from German competition in this country if the duty on files, clauses 3 and 4, now existing under our present tariff, should be reduced and they could use this country as a dumping ground.

Somewhat similar evidence could be furnished, if desired, regarding France, Austria, and Sweden, and it seems to hinge only upon the question of opportunity when this country will become the common "dumping" ground for the surplus foreign product, and to an extent and cost disheartening to contemplate for the American producer.

5. In further explanation of certain portions of the testimony submitted at the hearing of January 15, permit me to say that, while the volume of file and rasp imports into this country averages less than 2 per cent. of this country's output, is it not a fact that of the many hundreds of iron and steel products regularly carried in stock by the ordinary hardware merchant not more than 5 per cent. of them show any importations whatever into America, and of this small percentage the total amount imported does not exceed 1 per cent. of this country's output? Such is the fact, I am very well advised, and applies in nearly the same percentage to many other lines besides hardware.

Referring to the testimony of the relative wage scales in this country and Canada, it should, of course, be borne in mind that a fair comparison of the two scales should of necessity be upon equal bases of size, output and character of equipment. In other words, with a factory of equal size and similarly equipped as is our factory at Port Hope, Canada, but located in the United States, the cost of manufacture here would be greater than that in Canada.

The point was raised by one of the committee that the German tariff appeared to be less on the small sizes than on the large sizes of files, and no satisfactory explanation could be given by the witness. It appears, however, that their tariff is based on 100 kilos, which, being converted into the different weights per dozen in pounds, shows the following actual duty on one of the common shapes of files as an example, and demonstrates that German protection is graded according to the size and value of files, as in America:

Kind.	Weights per dozen.	Duty Cents.
6-in. hand.....	2 lb. 5 oz.	10
12-in. hand.....	14 lb. 4 oz.	39
18-in. hand.....	43 lb. 10 oz.	47

In conclusion, permit me to call your attention once more to the matter of net profit yielded this company upon its 1908 business, which, better than anything else, would seem to gauge the entire question. As stated at the hearing, our total dividends paid for the year aggregated 10 per cent. upon the capital, while the net profit on the net investment figured a little under 10 per cent. These figures should conclusively show that, notwithstanding the argument to the contrary by one member of your honorable body at the time of the hearing, January 15, it would be hardly possible to make any reduction in tariff rates without a corresponding reduction in profit, unless the resulting difference is compensated for in cost schedules.

CUTLERY.

Eleven Cutlery Importers Urge Ad Valorem Rates.

This statement, which is signed by Geo. Wostenholm & Son, J. A. Henckels, Vom Cleff & Co., A. L. Silberstein, Graef & Schmidt, S. R. Droscher, F. A. Koch & Co., Wester Bros., Krusius Bros., Schmachtenberg Bros. and Max Klaas, is as follows:

We believe that the present system of combination duties, based on an artificial, arbitrary price division, is unscientific and unwieldy in the lines of merchandise classified under paragraphs 153 and 155. We therefore present for your consideration the placing of a straight ad valorem duty on each line of goods. Twelve years of the present tariff law's operation would seem sufficient to enable the fixing of an average ad valorem rate, which your committee can recommend, and thereby provide the revenue, protect the laborer and manufacturer, and yet not place the article beyond the consumer's reach.

A straight ad valorem duty will make the classification of invoices simpler and easier, the amount of duty can be ascertained more easily and will in every way conduce to betterment in the actual work of the customs officials. Again, such a rate will have the effect of settling grades and bettering the product. The foreign manufacturer now makes his goods to meet the divisions arbitrarily established under the law; in other words, he causes certain goods to be worked under the limit price in its class. If there be no class, then the buyer would be the gainer as well as the Government. The former would get a better article, the latter more duty. An article costing \$1.00 can, by omitting certain operations trifling in cost, be reduced to \$1.50. This is, of course, especially true of the higher priced articles in these various lines. From these figures it can be seen that specific duties are unjust and unfair, as they put a widely different range of duties on goods in the same class, whether it be knives, razors or shears.

Take a knife valued at \$3.25 per dozen, the specific duty is 20 cents per piece, per dozen \$2.40; ad valorem 40 per cent., \$1.30; total, \$6.95, making 114 per cent. duty. If the maker can reduce this value to \$3 per dozen, the duty paid is but \$2.40, or 80 per cent. ad valorem. The difference in this rate of duty paid is caused by the effect of the specific duty on the percentage and the actual duty paid on the article imported.

To-day there is every incentive to cheapen a grade or with dishonest men to undervalue. In the latter case the honest competitor cannot do business and the Government loses the duty, and in the former the consumer receives an inferior article. It is respectfully submitted that a straight ad valorem schedule will give less chance of or cause for undervaluation. Following are present rates of duty on pocket knives under section 153:

1. Valued not more than 40 cents per dozen, 40 per cent. ad valorem.
2. Valued more than 40 cents and not more than 50 cents per dozen, 1 cent per piece and 40 per cent. ad valorem.
3. Valued more than 50 cents and not more than \$1.25 per dozen, 5 cents per piece and 40 per cent. ad valorem.
4. Valued more than \$1.25 and not more than \$3 per dozen, 10 cents per piece and 40 per cent. ad valorem.
5. Valued more than \$3 per dozen, 20 cents per piece and 40 per cent. ad valorem.

The importation of pocket knives for 1907, arranged under their above classifications, was as follows:

	Amount imported.	Duty collected.	Average ad valorem rate.
1.....	\$165,419.00	\$66,160.00	40.00
2.....	153,766.20	99,877.91	64.95
3.....	288,924.08	260,359.98	93.23
4.....	242,636.47	220,799.79	91.00
5.....	157,051.62	132,179.25	84.16

So that there were imported pocket knives paying duty under this section valued at \$1,007,697.39, paying the Government \$788,376.93 duty, and the average rate of duty paid ad valorem was 78.33 per cent.

If an ad valorem duty be imposed the revenues received thereunder will yield, we believe, as much or more revenue

as is at present obtained. The cost of assessing duty will be lowered and the domestic industry not alone survive, but continue to flourish.

It cannot be denied that the skilled worker in the United States receives more pay than his fellow abroad. It is respectfully submitted that this difference is not so great in those grades of goods higher in price. Yet from the foregoing table it will be seen that in the grades in which the importations were largest the protection given ranges from 93.23 per cent. to 91 per cent.

It may be safely said that the only lines where the foreign product enters into competition with the American is in the line costing \$1.25 per dozen and upward to \$4 per dozen. Beyond the \$4 figure the domestic production is small and the competition therefore is trifling.

The domestic production is considerably over \$3,000,000, while the importation (cost price) is about \$1,100,000. The domestic industry in this line during the last 12 years shows a steady increase. Comparisons as to labor costs are misleading and give no true idea in any way. It must be remembered that in the material cost of a pocket knife the steel is but a very small item wheresoever the pocket knife be made. The domestic manufacturer makes a profit which enables him to call himself prosperous, and to employ his workman at a wage claimed to be three times larger than the German and twice that of the British workman. Whatever be the labor cost, it remains true that the domestic manufacturers are increasing in numbers as well as output.

Razors have three standards under paragraph 153, as follows:

1. Valued at less than \$1.50 per dozen, 50 cents per dozen and 15 per cent. ad valorem.
2. Valued at \$1.50 and less than \$3, pay a duty of \$1 and 15 per cent. ad valorem.
3. Valued at more than \$3 per dozen, pay a duty of \$1.75 per dozen and 20 per cent. ad valorem.

Imports and duties in 1907 were as follows:

	Amount imported.	Duty collected.	Average ad valorem rate.
1.....	\$141,607.47	\$79,904.00	56.43
2.....	296,315.25	162,534.65	54.85
3.....	95,981.16	54,224.55	56.49
Totals.....	\$533,903.88	\$296,663.20	....

It will be found that the average rate of duty is 55.53 per cent. on all grades.

According to the statement presented to your committee there are but five factories in the United States making razors. This, of course, does not include what may be called a specialty, the safety razor. It would seem that there are about 400 men employed in the industry and that the product is about \$400,000 a year in value. The manufacturing of razors to-day, and especially in the United States, is largely machine work, which can be turned out as cheaply in the United States as in any other country.

Scissors and shears are divided into three classes under section 153:

1. Up to 50 cents per dozen, pay a duty of 15 per cent. ad valorem.
2. Valued between 50 cents and \$1.75 per dozen, pay a duty of 50 cents per dozen and 15 per cent. ad valorem.
3. Valued at more than \$1.75 per dozen, pay a duty of 75 cents per dozen and 25 per cent. ad valorem.

Imports and duties in 1907 were as follows:

	Amount imported.	Duty collected.	Average ad valorem rate.
1.....	\$50,196.50	\$26,208.45	52.21
2.....	243,828.94	141,147.13	57.89
3.....	188,326.01	86,581.21	46.00
Totals.....	\$482,351.45	\$253,936.79	....

The average ad valorem rate is 52.86 per cent. The ad valorem duty on this item would help materially to place in the hands of the consumer a better article than can be obtained at the present day. It should be kept in mind, as will be seen from the table, that the average rate of duty is a great deal higher on a percentage basis than at first sight an inspection of the table would suggest.

Scissors are an absolute necessity in every family. They constitute an article that is used by every one, and, consistently with all the propositions of duty to the Government, the consumer should have a fair chance to get the best article obtainable for the money. The manufacturing of scissors is to a great extent confined to Germany. The American manufacturer, it is true, in the cheaper grades of cast scissors or malleable iron shears or in the better grades of what is known in the trade as trimmers and shears, is controlling the market here, and going further, is even exporting them to Germany and England.

The cutlery clause, paragraph 155, also fixes a combination duty, except the omnibus clause, which provides for 45 per cent. ad valorem. The importation of table cutlery under this paragraph was of the value of \$174,835.44, paying duties amounting to \$87,187.26, the equivalent ad valorem rate being 49.87 per cent.

It appears that the committee of the table cutlery manu-

facturers which appeared before the Ways and Means Committee voluntarily suggested a reduction in the tariff. The present average rate is about 49.36 per cent, and it appears to your petitioners that a straight ad valorem duty should be imposed which will meet the wishes of the American manufacturers of table cutlery, furnish them with adequate protection and give the Government its revenue.

From Twelve American Shear Manufacturers.

In requesting a raise in the schedules relating to scissors and shears or parts thereof, the undersigned, representing practically all the manufacturers of American scissors and shears, respectfully submit the following facts for your consideration:

That the scissor and shear industry of the United States is controlled by no "trust," combination or agreement.

That there are in existence and operation at the present time about 12 factories (located in Connecticut, New York, New Jersey, Pennsylvania, Ohio, Indiana and Michigan) engaged in the manufacture of scissors and shears, each absolutely distinct from all others and in active competition with each other.

That the average proportion of labor to cost on imported scissors and shears is about 40 per cent. The actual proportion of labor to cost of American scissors and shears is practically 80 per cent.

That it is known that operatives' wages are two to three times greater in this country than in Germany or England.

That the American manufacturers of high grade cutlery are confined strictly to the manufacture of one class of scissors and shears—namely, a laid steel shear upon a malleable iron or forged steel base.

That at present there are no solid steel scissors or shears under 6 in. manufactured in this country, and none of the larger sizes, except a few surgeons' and dentists' instruments.

That it is impossible under the existing tariff for manufacturers in this country to compete with the solid steel shears and scissors manufactured in Germany.

That with a tariff on scissors and shears, as will be proposed, a new industry would be created in this country—namely, the manufacturing of high grade steel scissors and shears, something which, as before stated, has never been done and it is impossible at present to do, at a profit, owing to the difference in the cost of labor.

That with an increase in the duty as proposed there would be no increase in the price of shears to the consumer. At the present time the so-called American steel shears are only finished in this country, the blanks coming in under the lowest or next to the lowest schedule. These shears, when finished by American manufacturers, cost in the neighborhood of \$6 per dozen, against an import valuation of the finished product from Germany of \$3.50 per dozen.

That notwithstanding we would make a much better shear in this country, and one which could be sold at the regular retail rate which now prevails for German goods, if we had a higher duty, German goods, now imported under the \$3.50 schedule, sell at retail for \$1.25 to \$1.50 per pair against American finished goods of the same quality, which retail for \$1 and \$1.25. The retailer finds it to his advantage to favor the belief, commonly held, that an imported shear is superior and costs more and should sell for more. By fostering this fallacy he sells the foreign goods at a much larger profit than he can obtain on home products.

While the actual wage of a German mechanic is apparently two-thirds of that paid in this country, the difference is really greater. In Germany the work is done entirely by contract and not in a factory. The workman takes to his home the rough material, and with the aid of the family the product is finished. The wages earned are credited to the man and average \$10 per week, not for the man's work, but for the work of himself and family. In this country the same man would average \$3 per day for his own work done in the factory.

With a protective tariff these goods can be made in this country and sold here at a price no higher than the imported article is selling now, and still leave a margin of profit to the retailer of 100 per cent.

We would respectfully suggest the following schedule be substituted for that now in force. We believe a greater number of classifications necessary in order to protect the manufacturer in this country as much as possible from undervaluation, and, further, believe a specific duty will also tend to prevent that prevalent practice so injurious to American manufacturers:

Scissors and shears and blades for same, finished or unfinished, valued at not more than 50 cents per dozen, 50 cents per dozen; valued at more than 50 cents and not more than \$1 per dozen, \$1 per dozen; valued at more than \$1.50 and not more than \$2 per dozen, \$2 per dozen; valued at more than \$2 per dozen and not more than \$2.50 per dozen, \$2.50 per dozen; valued at more than \$2.50 per dozen, \$2.50 per dozen and 25 per cent ad valorem.

We claim that this increase in tariff would not affect the price of shears and scissors to the consumer, but would create an entirely new industry in this country, one which would ultimately mean the employment of more than 1000 men, with a product considerably more than \$1,000,000.

We believe that our shear manufacturers are as progres-

sive as any other Americans, and it stands to reason that we would manufacture these goods if we could. That we do not is proof that under existing conditions we cannot.

TOOL STEEL.

From E. T. Clarge, President Columbia Tool Steel Company, Chicago Heights, Ill.

Regarding the proposed change in paragraph No. 135 of the steel schedule referred to in the statement of B. M. Jones & Co., Houghton & Richards and Edgar T. Ward & Sons, Boston, Mass., inasmuch as I am quoted, I feel justified in asking your consideration of the following points:

In the first place, the article referred to is contradictory. The article states that, if the duties are increased, American mechanics will be compelled to use inferior tools, intimating, of course, that the foreign product is a better quality than manufactured in this country. Then they quote my article and affirm my statement that European steels can be duplicated or excelled in this country by half a dozen leading tool steel makers and sold at a lower price. In explanation of this peculiar condition, you will understand that up to within the last 65 or 70 years there was no tool steel whatever manufactured in the United States and prior to that time the material was supplied almost entirely from England. The result was that the English steels built up a prestige, the effects of which are still apparent, although conditions have changed and there is no question that the American steel maker to-day leads the world.

If it were possible for all tool steel entering the United States to be classified according to its quality as shown by analysis, there would be no need of a protective tariff. The traditions built up prior to the manufacture of tool steel in America still have such a strong hold among certain classes that when a standard European make of steel fails to give results the workman invariably will take the blame on himself for not giving it the proper handling, whereas, if a failure occurs with American steel, it always the steel that is at fault.

A recent analysis of one of the most widely sold imported steels, and which sells at a price of 15 or 16 cents per pound, showed phosphorus, 0.025, and sulphur, 0.024. Any American tool steel maker will furnish a steel as low or lower in these impurities for not to exceed 8 cents per pound. Another analysis of a European steel recently exploited in this country shows phosphorus, 0.03; sulphur, 0.018, with 0.50 tungsten. This steel is also sold at 15 or 16 cents per pound and could be reproduced at not over 9 cents per pound.

There are any number of manufacturing concerns in this country who will bear witness to the fact that certain wily Frenchmen invaded the country a few years ago and sold any amount of a supposedly miraculous tool steel which was said to be manufactured from rare ores controlled by the French Government, the price being between 40 and 50 cents a pound. Those who were unfortunate enough to buy the material found that it was almost worthless and of a quality that could be duplicated in this country for 5 or 6 cents per pound. This case is an extreme illustration of the credulity of some American tool steel buyers and their curious confidence in anything manufactured on the other side of the ocean.

If my statement quoted by the parties referred to and affirmed by them is correct, a prohibitive duty would serve as protection to the American tool steel buyer and would develop proper appreciation of American made goods.

If it were possible to regulate the quality of imported tool steel by laws similar to the pure food laws, and every purchaser had a ready means of knowing the quality of the material as shown by analysis, then my statement that the American manufacturers can duplicate foreign made steels at a lower price would be accepted universally and the business would remain in this country, tariff or no tariff. This would be manifestly impossible. In addition to which the tool steel consumer has no facilities for making chemical analysis; in fact, in most cases would not understand what a chemical analysis indicated. It is difficult to judge the quality of tool steel with a single test, as an inferior quality of steel may give very good service the first time it is hardened, but deteriorates much more rapidly with successive hardenings than a better quality.

It is therefore our contention that an ad valorem rate should be placed on all foreign tool steels, and that it should be sufficiently high to protect the American maker against unfair competition by inferior grades, and also to protect the buyer and direct his attention to the superior quality of American made tool steels.

IRON ORE.

Statement of William G. Mather, Cleveland-Cliffs Iron Company, Cleveland, Ohio.

In connection with the hearings on the revision of the tariff, I wish to present to your attention the following statement, showing:

1. The growth of the shipments of Lake Superior iron

ore from the mines from 1890 to and including 1908, the last date being approximate as the total figures have not yet been received.

2. The average cost per ton of these shipments for the year 1908, divided as follows:

a. Cost f.o.b. cars at mine, divided into labor and supplies—supplies including such items as taxes and insurance.

b. Depreciation, which means the necessary cost charged per ton, so that when the mine is exhausted the preliminary development cost will have disappeared from the books.

3. Royalty.

4. Rail transportation from mines to vessels at upper lake ports.

5. Lake transportation from upper lake ports to Lake Michigan and Lake Erie ports.

6. Freight rates from said lower ports to points of consumption in the Mahoning and Shenango valleys, Pittsburgh, middle Pennsylvania, Eastern points the other side of the Allegheny Mountains:

Shipments of Lake Superior Ores, by Five-Year Periods, from 1890 to 1908.

Years.	Gross tons.	Years.	Gross tons.
1890.....	9,003,725	1906.....	38,522,239
1895.....	10,429,037	1907.....	42,245,070
1900.....	19,059,393	1908.....	25,348,168
1905.....	34,353,456		

Average Cost of Mining and Delivering Ore at Lake Erie Ports.

Cost per ton for:	
Labor	\$0.7512
Supplies, including taxes and insurance	0.3471
Depreciation	0.2863

Total cost per ton on cars at mines..... \$1.3846

Cost per ton for:

Royalty	\$0.3309
Transportation, rail and lake	1.2344
Administrative expense, commissions, &c.	0.1096

Total cost per ton at Lake Erie ports..... \$3.0595

Average freight rates from Lake Erie ports to furnaces:

Mahoning and Shenango Valley points	\$0.65
Pittsburgh and vicinity	1.05
Western Pennsylvania points, other than above	1.25
East of Allegheny Mountain points	1.50

These figures represent the average cost of the above items of much the greater portion of all the ores shipped from mines other than those controlled by the United States Steel Corporation during 1908, and in my judgment very closely approximate what would be the exact figures in case every single mine had been included in the estimates.

The costs of the ores shipped by the United States Steel Corporation are not here included, as it has prepared its own figures. Of the total amount of ore shipped now from Lake Superior, about one-half is for the account of the United States Steel Corporation and the other half for the account of all other producers.

I also give you herewith the figures showing the average daily wages of the employees, as follows:

1. Of Lake Superior iron ore mines, excluding salaried officials.

2. Of a railroad in the Lake Superior District whose sole business is the transportation of iron ore, and which I think is representative of all upper lake railroads engaged in that business.

3. Lake steamboats engaged in transporting the ore:

Average wages per man per day:	
All employees at mines	\$2.47
All employees, lake-ore steamboats	2.38
All employees (exclusive of manager) on iron-ore railroads	2.34

You will note the tremendous development of this industry since 1890. It is this great development, stimulated by the protective tariff under which the iron and steel industry of this country has grown, that has enabled our iron and steel industry to outstrip in production all other countries. There is still an enormous acreage of undeveloped mineral territory in the Lake Superior region and also in other parts of the United States. This country could never have made its great progress in iron and steel except through the development of these great bodies of iron ore and the transportation facilities, both rail and lake, coincident therewith.

The greater portion of this iron ore is consumed at inland furnaces, thus necessitating a rail charge from the lower lake port in addition to the cost at said port. You will note that the average cost per ton of Lake Superior iron ores at such delivery points is as follows:

Lake Erie ports	\$3.06
Mahoning and Shenango Valley points	3.71
Pittsburgh and vicinity	4.11
Western Pennsylvania points other than above	4.31
Points east of the Allegheny Mountains	4.56

I do not have the figures before me of the cost of foreign ores at the Eastern seaboard, but from the above figures you will note that any material reduction in the tariff on iron ore will increase the difficulty already existing for Lake Superior ores to compete with foreign ores at points east of the Allegheny Mountains, and also will affect Lake Superior iron ore at points west of the mountains, not perhaps so much from the fact that foreign iron ores themselves will go west of said mountains in large quantities as from their

products, such as pig iron and manufactured steel, thus limiting the market of our customers west of the mountains and decreasing their ability to buy ore, or forcing the selling of their products at lower figures, which would thus force lower selling prices for Lake Superior iron ores. The tendency of lower selling prices would be to make lower costs, which means inability to pay as high prices for labor and supplies.

This great industry, with the mining communities, railroads and vessel interests working in harmony with it, as well as the great steel works consuming the ore, has been built up under our present tariff laws. It seems to us that any reduction in these tariffs should be made with much conservatism, so as to avoid the necessity of any radical change of conditions under which it is operating.

We have been unable to get accurate figures of the cost of producing iron ore and the daily wages prevailing in the countries already exporting to the United States, and which countries are ready to increase said exportation with the lowering of the tariff, such as Spain, Canada, Cuba, &c. Doubtless these figures will be presented to you from other sources or can be secured from the departments of the Government.

PIG IRON.

Statement of B. F. Fackenthal, Jr., President Thomas Iron Company, Easton, Pa.

The Thomas Iron Company was organized in 1854 and has manufactured merchant pig iron continuously down to the present time, a period of 54 years. It does not manufacture any other iron or steel product. The company is doubtless the oldest in America manufacturing merchant pig iron. It has never been reorganized nor had its corporate name changed. It passed successfully through the panics of 1857, 1873, 1893 and 1908, and through several anthracite coal strikes. On at least two occasions during anthracite coal strikes it was compelled to blow out or bank all its furnaces but one. It also passed successfully through the period of the Civil War. At the present time the company has nine stacks, four of which are in blast.

From the time of its organization in 1854 it has produced from its own mines, or from mines controlled directly or indirectly by it, over 50 per cent. of its iron ore requirements. Many of its mining operations proved unprofitable, but others were profitable, particularly the Richard magnetic iron ore mine, located near Dover, N. J., which has been the most profitable of all its mining operations. Twenty-four per cent. of all the ore smelted by the company during the 54 years it has been in business has been taken from that mine.

The company has doubtless been as successful as any of its competitors manufacturing merchant pig iron in the East. The returns to its stockholders, however, have never been abnormal. At times dividends were quite small, at others they were passed altogether; but taken as a whole, the investment has been fairly profitable. During my administration as president and general manager, covering the past 16 years (1893 to 1908, both inclusive), the capital of \$2,500,000 has remained exactly the same, and over that period of time the dividends have averaged 6½ per cent. per annum. The stock of the company is not listed, nor has it ever been used for speculative purposes, but is held largely by descendants of people who established the company. At present there are 500 stockholders, of whom 248 are women. Some of the employees are children and grandchildren of the men who aided in building the first furnace in 1854.

The Thomas Iron Company's cost of manufacturing basic and foundry pig iron for the year 1907, from figures taken from the books of the company, amounted to \$18.28. This cost includes fuel, ores, limestone, labor, salaries, laboratories, taxes and other items entering into the cost, as well as 14 cents for maintaining our New York and Philadelphia sales offices, and 17 cents, the actual cost of relining and repairing the furnaces during that year. The charge for relining, however, for that year is 6 cents below the average cost. There has been expended for replacements an average of 37 cents per ton on all iron manufactured during the past 16 years, making the total cost of operation, including replacements, \$18.65 per ton. The iron ore has been charged at its cost, without adding royalties or profits of any kind. We have no bonded indebtedness and therefore no interest item has entered into this cost.

The item of 37 cents for replacements does not cover an extension of the works or additional furnaces; in fact, there were 11 stacks in 1893, two of which were abandoned, and, moreover, 90 per cent. of the amount for replacements was expended on two of the remaining nine stacks.

Our sales over the entire year 1907 averaged \$19.75 f.o.b. cars at furnace, leaving a profit on pig iron of \$1.10 over and above the cost as herein stated. It is a fact, however, that during the year under review pig iron sold at times at higher prices, but the average price received by the Thomas Iron Company, as shown on the books of the company, was \$19.75 per ton.

I am informed that the importations of foundry pig iron during 1907 amounted to about 500,000 tons, but am not in-

formed as to the price at which it was sold. I am, however, personally interested in a foundry company, to whose figures I have access, and learn that it purchased 8533 tons of English iron during 1907 at an average cost of \$21.20 delivered at its foundry, where the freights from tide were 80 cents per ton. Over the same period of time our price delivered to that foundry was \$22.50 per ton, or \$1.30 above the price at which it purchased foreign iron.

I am also reliably informed that one of the largest manufacturers of cast iron water pipe in the North, whose works are located on water front, used imported English iron almost exclusively during 1907, claiming that the price was much lower than that at which it could buy from merchant furnaces in this country.

The year 1908 was a panic year and is not herein referred too, particularly as merchant pig iron has been sold by Eastern furnaces without profit.

I am more or less familiar with costs at other plants in the Lehigh and Schuylkill valleys, and, moreover, have obtained some figures of cost from some of the best plants in these districts, which, together with conditions at the Thomas Iron Company's plant, enable me to say that the cost of manufacturing foundry pig iron in eastern Pennsylvania at the present time is \$16.25, based on present prices for fuel and labor and on the 1908 price for lake ore; and, in other respects, on the same basis as the figures for 1907 contained herein. Furnaces running on basic pig iron suitable for open hearth steel should manufacture iron at 75 cents less than the cost for foundry iron; in fact, the Thomas Iron Company's furnaces show about that difference between the two grades, making the cost at the present time of basic \$15.50 per ton.

Any further advance in the selling price of iron is sure to entail an increase in the cost of manufacture, including an advance in labor at our mines, quarries and works. During 1906 all wages were advanced 10 per cent.; during 1907 an additional advance of 10 per cent. was made; during 1908 a reduction of 10 per cent. was made. If a revision of the tariff does not handicap us in getting our business back on a paying basis, the wages of 1907 must be restored and will add directly to the above estimated cost.

If the tariff duty on pig iron is removed or reduced, I feel confident that it will eventually compel all manufacturers of merchant pig iron in the East to go into liquidation.

STEEL RAILS.

Statement of Powell Stackhouse, President Cambria Steel Company, Philadelphia, Pa.

We submit herewith our income account presented at our shareholders' annual meeting for the year 1906, also the facts of our rail business for the same period. The amount paid for labor, in connection with the manufacture of rails, shows the direct expenditure for labor in manufacturing, or about 39 per cent. The remaining 61 per cent. of the cost covers amount paid for purchased metal, ores, fuel, supplies, transportation, &c., of which a large proportion is labor.

The principal products of the plant are steel rails, structural shapes (plain and fitted for buildings), steel plates, bar steel, locomotive and car forgings, steel cars, and a large line of agricultural steel and other specialties.

The total tonnage sold and shipped in 1906 was 789,275 gross tons. The net earnings from all the manufacturing operations of the company, after deduction for depreciation, were \$4,347,704, or an average profit of \$5.51 per ton. This profit includes profits on all the stages of manufacture which are legitimate and justifiable, including a large percentage of the ore and fuel which is owned exclusively by this company and which is figured at net cost to the company. In declaring the total earnings as stated, current repairs and maintenance of plant are included and a proper deduction has been made for annual depreciation. The paid in capital of the company is \$45,000,000, and the return is 9.67 per cent. under the very favorable conditions prevailing in 1906. On the item of rails the profit was \$3 per ton. The above facts have all been furnished to the Department of Commerce and Labor, and, if desired, the Department can verify them.

1. We wish to submit to the committee the fact that while it may be possible for a few of the larger steel manufacturing concerns to stand a reduction in the rates in the Dingley tariff, except on orders for Gulf and Pacific Coast points, other concerns which buy all or nearly all of their raw materials will be driven out of business. Companies which control their own raw material, railroad lines and lake transportation to their works have other advantages, due to their great aggregations of capital, and have works located at the various sales centers of business, all of which advantages enable them to manufacture and market their products at a considerably less cost per ton than any of their competitors, will survive.

2. Any material reduction in the duties on steel can only be met by corresponding reductions in the wages paid for producing the ores, coal, coke and limestone and for labor in the several manufacturing operations.

3. We feel sure that the committee does not wish to further consolidate the steel manufacture of the country in

fewer hands than now and thus reduce competition, which will certainly be done by radical reductions in the steel schedule.

Analysis of Cost of Standard Rails Produced by Cambria Steel Company in 1906.

	Total cost to manufac-	Labor in metals,	All purchased
	Cambrid-	mining ores, fuels,	mining ores, fuels,
	gina.	supplies,	supplies,
Ore (176 per cent.)	\$4.52	\$0.93	\$3.59
Coke (113 per cent.)	2.97	1.25	1.72
Limestone (54 per cent.)	0.80	0.22	0.58
Smelting	2.03	1.41	0.62
Pig iron produced	13.77	4.57	9.20
Average (including pig iron purchased)	14.70	4.58	10.12
Average (including pig iron and spiegel-			
eisen purchased)	15.65	4.75	10.90
Bessemer ingots	18.68	6.25	12.43
Bessemer blooms	20.70	7.19	13.51
Standard rails (mill cost)	\$24.34	\$9.42	\$14.92
Administrative and selling expenses	0.56	0.33	0.23
Total cost	\$24.90	*\$9.75	†\$15.15

* 39 per cent. † 61 per cent.

STEEL.

Statement of E. H. Gary, Chairman United States Steel Corporation, New York.

The following item appeared in the *Journal of Commerce* of this city on January 21:

According to the *Canadian Gazette* the general manager of the Dominion Iron & Steel Company has stated that this company can furnish steel to the world's markets at \$6 per ton less than Pittsburgh (which for purposes of comparison is selected as the cheapest producer), for the following reasons: The cost of assembling the raw materials at Pittsburgh is, at the lowest estimate, \$3.25 per ton, to which must be added the cost of conveying the manufactured iron to the seaboard—namely, \$2 per ton, while the cost of assembling at Sydney, which is on the seaboard and 1000 miles nearer the great markets, is given at 79½ cents per ton, the difference in favor of Sydney being calculated at \$6 per ton as stated.

The *Canadian Gazette* referred to in the article is an official paper published in London. The iron and steel industry in Canada is fostered by bounties, which operate as follows:

	On pro-	On pro-
	portion	portion
	made from	made from
Pig iron	Year.	Year.
	1908	1908
Puddles from bars from Canadian	1909	1.904
pig iron	1908	1.848
Steel, manufactured in Canada	1909	1.176
from ingredients of which not	1908	1.848
less than 50 per cent. of the	1909	1.176
weight thereof consists of pig		
iron made in Canada		
Rolled round wire rods, not over		
% in. in diameter, manufactured		
from steel produced in Canada		
from ingredients of which not		
less than 50 per cent. of the		
weight thereof consists of pig		
iron made in Canada, when sold		
to wire manufacturers for use		
or when used in making wire in		
their own factories in Canada,		
on such wire rods made after		
December 31, 1906		
		6.72

In addition to the above bounties, the Canadian manufacturers of iron and steel are protected by a duty of \$2.80 per gross ton on pig iron and \$7.84 per ton on steel rails and structural steel.

IRON AND STEEL SHEETS.

Statement of Isaac M. Scott, Chairman Committee of Sheet Manufacturers.

We submit herewith for your consideration such data, including costs of production and selling prices, as we have been able to procure bearing on the subject, and our reasons based thereon for asking that adequate protection be accorded these products in the new tariff measure soon to be enacted by Congress.

BLACK SHEETS.

Attached hereto will be found a sheet marked Exhibit A, which sets forth in detail what can be regarded as the average cost of producing No. 24 gauge steel sheets (common or black) in the Pittsburgh-Youngstown-Wheeling District, which has probably the lowest cost of production for the commodity under consideration of any point in the United States, and the correctness of which is duly certified to by parties actively engaged in the business; it is, of course, being understood that the determinations arrived at are not necessarily the cost of any particular plant, but are what the parties certifying regard as a fair average cost for the district.

In the compilation of these costs sheet bars have been figured on the basis of \$27.50 per gross ton delivered to point of consumption, this being their present selling price

and representing not more than the average price for the last several years, the price for 1907 averaging about \$30. In this connection it would seem well to explain that more than half of the companies engaged in the manufacture of sheets purchase their raw material—i. e., sheet bars—in the open market, having no facilities for making them.

No. 24 gauge has been selected as the figuring basis for the reason that it is a standard one and the costs of manufacture of the other gauges are relative, and they are proportionately protected by the present tariff.

No cost exhibit has been submitted for iron sheets, for the reason that very few are made, and, besides, the cost of production is in excess of that for steel sheets.

It will be noted that, as shown by Exhibit A, the cost of No. 24 gauge black steel sheet is \$47.90 per gross ton, or \$2.14 per 100 lb.

For reasons which will be apparent to you, it has been found impossible to procure specific information as regards the detailed cost of manufacture of foreign sheets, but we are informed—and believe reliably so—that the cost of production in England to-day for No. 24 gauge is about \$34.25 per gross ton, or \$1.52½ per 100 lb., the cost in both Germany and Belgium being lower. But in the absence of full data bearing on this point, we can only judge the cost of manufacture by the selling price, and at the present time the English price of No. 24 gauge at Liverpool is \$1.65 per 100 lb.

Assuming that the cost of production is not greater than the selling price, and comparing with the domestic costs, we arrive at the following results, all based on No. 24 gauge:

New York.	
Domestic mill cost.....	\$2.14
Freight .....	.16
English selling price, Liverpool.....	\$1.65
	<u>.10</u>
	1.75
Difference per 100 lb.....	\$0.55
New Orleans and Galveston.	
Domestic mill cost.....	\$2.14
Freight .....	.30
English selling price, Liverpool.....	\$1.65
	<u>.11</u>
	1.76
Difference per 100 lb.....	\$0.68
Pacific Coast.	
Domestic mill cost.....	\$2.14
Freight .....	.95
English selling price, Liverpool.....	\$1.65
	<u>.35</u>
	2.00
Difference per 100 lb.....	\$1.09

The difference, as indicated by the foregoing, of 55 cents per 100 lb., or practically 6-10 cent per pound between the domestic manufacturer's cost f.o.b. New York (without profit) and the English selling price at the same point (including presumably some profit), shows that any material reduction in the present rates would allow the latter to successfully invade this important market.

But in considering the Pacific Coast situation we find conditions even worse, as under the present rates it would show the advantage to be in favor of the foreign manufacturer, but not sufficient, perhaps, to justify him in establishing warehouses there and cover the cost of distribution; but any recession, even though slight, from present rates would undoubtedly serve as a stimulant which would result in putting this market in his possession—not only along the coast, but for a considerable distance inland as well.

GALVANIZED SHEETS.

In the manufacture of galvanized sheets, black steel sheets, such as are treated upon the preceding paragraphs of this brief, constitute the base. These black sheets after being pickled and cleaned are coated with spelter, the process of pickling and coating being very similar to that employed in the manufacture of tin plate. The domestic cost of manufacturing galvanized sheets above the black sheet or base is, including labor, spelter, &c., approximately \$14.50 per ton, or \$5.25 per ton exclusive of spelter, and the extra duty of 2-10 cent per pound accorded this product under the present tariff (over the same gauges of black sheets) was intended to cover the increased cost of manufacture in this country (from the base sheet to the finished galvanized product) over that obtaining in foreign countries, including difference in cost of labor, as well as the difference in cost of pickling and coating supplies; and from the best information we have been able to obtain on this subject we believe that the slight additional protection accorded galvanized sheets does not more than cover this difference in costs.

All that has been said in that part of our brief pertaining to black sheets will apply with equal or greater force to the galvanized product, and any changes from present rates should be proportionate.

With regard to prices, it might be cited that in 1905 there was formed in England a combination of manufacturers, known as the British Galvanized Sheet Iron Asso-

ciation. This association is a very powerful one and was formed with the view of fostering the English export trade in galvanized sheets, the idea being to keep the English home price at a point that would show a satisfactory profit to the manufacturer, distributing the surplus production in foreign markets and at such prices as could be obtained, the loss, if any, in case it was found necessary to sell at a price below the cost of production, to be absorbed by the members of the association pro rata. It is readily apparent that, while such an arrangement is simplicity itself, its effectiveness for disposing of tonnage produced in excess of home market requirements and gaining a foothold in foreign markets is unquestionable.

All things considered, it is clearly apparent that only a slight reduction in present tariff rates would be required to enable the foreign manufacturer to use our markets as a dumping ground for his surplus production, thus displacing tonnage that otherwise would be made in this country; and to meet this situation, should it arise, it would be necessary for the domestic producer to effect a reduction in his costs, which would undoubtedly mean lower wages not only to the workmen employed directly in the mills, but in the production of materials and supplies used by the sheet manufacturer as well.

In order that the extent of the sheet industry may be in a manner measured, attention is invited to the following statistical data:

Number of companies actively engaged in the business	25
Number of roll trains operated.....	364
Number of galvanizing pots operated.....	90
Number of employees (estimated).....	21,000
Annual pay roll (estimated).....	\$20,000,000
Annual production of black sheets, gross tons.....	1,350,000
Annual production of galvanized sheets, gross tons.....	600,000

The process of manufacture from ore in the ground to finished sheet product, in the tonnage shown above, requires the following raw materials:

Sheet bars, gross tons.....	1,600,000
Pig iron and scrap required to produce above tonnage of bars:	
Pig iron, gross tons.....	1,700,000
Scrap, gross tons.....	425,000
Coke required in the production of above tonnage of pig iron, net tons.....	2,125,000
Coal required in the production of above tonnage of coke, net tons.....	3,500,000
Limestone required in production of above tonnage of pig iron, gross tons.....	850,000
Ore required in the production of above tonnage of pig iron, gross tons.....	3,125,000
Coal required throughout different stages of manufacture for steam and heating purposes, net tons.....	3,225,000
Spelter for coating, net tons.....	75,000
Total estimated labor cost from ore in the ground to and including sheet bar.....	\$11,000,000
Labor cost in finishing (as shown above).....	20,000,000

Total labor cost.....	\$31,000,000
Estimated transportation charges on above tonnages	\$9,500,000

The most important item in the cost of manufacture of sheets is that of wages, and we believe it can be truthfully said that in no branch of the manufacturing business are the workmen more intelligent and better paid, the average wage, including men and boys, being approximately \$3 per day.

Owing to the peculiar nature of the process of manufacture a highly skilled class of workmen are absolutely necessary, and in no branch of the steel business is the proportion of English speaking workmen so large as it is in that of making sheets. Automatic machinery to no considerable extent can be utilized, and as a matter of fact the improvements in the machinery employed and in the process of manufacture for many years have been very slight, although efforts in this direction have constantly been made by the leading engineers of the country.

The inability to make use of automatic machinery in the manufacture of sheets has prevented an increase in the tonnage output and a corresponding reduction in cost of manufacture, and there are no indications of any changes in this regard in the future.

At the meeting of sheet manufacturers held on December 10, it was the consensus of opinion of those present that so long as Congress would doubtless decide that a revision of the tariff on steel products was necessary, the changes should be kept within reasonable limits, and that any reduction in present rates in excess of from 15 to 20 per cent. would result in confusion in the business, necessitating a lower cost basis, which would undoubtedly mean lower wages to the workman.

It was believed that the rates now applying on the products covered by paragraphs 131 and 132, metal schedule, are consistent, and any changes therefrom should be made proportionate.

It is hoped that your committee may be able to see its way clear to recommend a reduction, if any, not greater than that suggested in the foregoing, thereby entitling it to the thanks of all directly or indirectly engaged in the industry for which we are speaking, including stockholders in the companies represented, as well as the workmen employed in the mills.

TIN PLATE.

Statement of Wm. U. Follansbee, Follansbee Brothers Company, Follansbee, W. Va.; Chas. E. Pope, Pope Tin Plate Company, Steubenville, Ohio; E. T. Wier, Phillips Sheet & Tin Plate Company, Clarksburg, W. Va.; and E. R. Crawford, McKeesport Tin Plate Company, McKeesport, Pa.

This brief represents the independent manufacturers, as follows: Number of companies, 12; aggregate capital, \$10,000,000; total mills, 103; annual capacity, tons, 300,000; annual capacity, boxes, 6,000,000; total employees, 7000; annual pay rolls, \$5,000,000.

The entire tin plate industry of this country employs direct about 2,000 hands and produces about 600,000 tons, or 12,000,000 boxes, valued at \$43,000,000, which requires:

1,400,000 tons ore, 850,000 tons coke, 400,000 tons limestone, 750,000 tons pig iron, 700,000 tons steel; total labor, including transportation.....	\$8,000,000
600,000 tons tin plate; total labor, including transportation	13,000,000

Total wages per annum paid American workmen dependent upon the tin plate industry, over 60 per cent. of which, as shown, is paid direct in making the tin plate alone.....	\$21,000,000
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The suggested duty of 1.2 cents per pound is absolutely necessary to continue the tin plate industry, fairly protect labor and permit a reasonable return upon the capital invested. This is required because of (I) lower foreign labor; (II) lower cost foreign raw materials; (III) smaller capital foreign investment; (IV) freight costs from mills to consuming points. These items are shown in detail as follows:

I.—LOWER FOREIGN LABOR.

Standard of Comparison.—Skilled labor in United States: Wage scales of Amalgamated Association of Iron, Steel and Tin Workers and Tinplate Workers' International Protective Association of America.

Skilled labor in Wales: Wage scales of Tin Plate Section Dock, Wharf, Riverside and General Workers' Union of Great Britain and Ireland.

General labor in United States: As actually paid by a most modern, well equipped mill in the Pittsburgh District taken from the pay rolls for the entire year 1907.

General labor in Wales: Estimated at one-half the rates paid in United States. (Common labor in Wales is unquestionably less than the rate shown by this estimate.)

	Per gross ton.	
	United States.	Wales.
Hot rolling.....	\$9.76	\$4.555
Opening .....	.425	.305
Pickling .....	.485	.275
Annealing .....	.87	.666
Cold-rolling .....	.525	.20
General mill.....	3.325	1.66
White pickling.....	.375	.278
Tinning	1.325	1.245
Washing	1.555	1.245
Rising .....	.88	.466
Assorting .....	.52	.415
Boxing .....	.465	.20
General tin house.....	2.44	1.22
 Totals.....	 \$22.05	 \$12.73
\$22.95 minus \$12.73 equus \$10.22 per 2240 lb., equals 45.6 cents per 100 lb.		

II.—LOWER COST FOREIGN RAW MATERIALS.

Steel bars from which tin plate is rolled, present market prices as shown by trade quotations:

Cost at mills in United States.....	\$27.50
Cost at mills in Wales.....	21.50

Difference per 2000 lb. finished tin plate.....	\$6.00
Equals 30 cents per 100 lb.	

III.—SMALLER CAPITAL FOREIGN INVESTMENT.

The cost of plant in the United States is just about 50 per cent. greater. Cost of labor, as shown, nearly double. Raw material charges nearly 30 per cent. higher. Interest charges about double.

	United States.	Wales.
To produce 25,000 tons per annum requires capital investment:		
In plant.....	\$500,000	\$333,333
In labor, raw and finished materials, accounts receivable, &c.....	500,000	250,000
 Total.....	 \$1,000,000	 \$583,333

Greater in United States.....	\$416,667	.....
At 6 per cent. = \$25,000; equivalent to per ton output, \$1 = 5 cents per 100 lb.		
Annual charges repairs, upkeep of plant and depreciation	\$50,000	\$25,000
Greater in United States, \$25,000 = per ton output \$1 = 5 cents per 100 lb.		

IV.—FREIGHT COSTS FROM MILLS TO CONSUMING POINTS.

Fully two-thirds of the consumption of tin plate in the United States is at the seaboard, New York, Philadelphia, Boston, Baltimore, New Orleans, San Francisco, &c.

Freight from mills in Pittsburgh District at shipping weight of 108 lb., including package as well as contents, as required by the railroads:

To New York at freight rate of 18 cents, equals 19 cents per 100 lb.
To New Orleans at freight rate of 34 cents, equals 34 cents per 100 lb.
To San Francisco at freight rate of 66.2 cents, equals 70 cents per 100 lb.
Average, 41 cents per 100 lb.

Freight from mills in Wales located at seaports at common rate of 9 shillings 6 pence per 2240 lb. of net contents, weight of package not included as permitted by steamship lines to New York, equals 10 cents per 100 lb.

A large portion of the tin plate consumption is seasonal and in regular sizes, for which the requirements can be anticipated by many months, while the size and character of boxes of tin plate make it particularly desirable for ballast, thus permitting as low water freight cost from Wales to New Orleans and San Francisco as to New York, accordingly the freight item from mills to consuming point is very important and may show as high as 60 cents per 100 lb. differential in favor of Wales. With any spirit of fairness to American mills it would appear this factor should not be considered at any less than the average from American mills to seaboard points, as shown above, of 41 cents per 100 lb.

Recapitulation.

I. Lower foreign labor.....	45.6 cents per 100 lb.
II. Lower cost foreign raw materials.....	30 cents per 100 lb.
III. Smaller capital foreign investment.....	10 cents per 100 lb.
IV. Freight costs from mills to consuming points, average.....	41 cents per 100 lb.

Total.....	\$1.266 per 100 lb.
Equivalent to.....	1.27 cents per lb.

The suggested new duty of 1.2 cents per pound is accordingly only fairly protective and by no means prohibitive.

The establishment of the American tin plate industry under a reasonable tariff most emphatically has not increased the cost to the domestic consumer, but on the contrary has unquestionably reduced the price, as shown below:

	Welsh tin	American tin plate.
plate duty added. 1872-1878.	1872-1878.	1879-91. 1904-1908.
Duty 15 % ad valorem.	1ct per lb.	1.5 cents per lb.
Average price.....	\$7.30	\$4.81 \$3.48

The productive capacity of American mills considerably exceeds the consumption of the tin plate, showing frequent shutdowns and keen competition.

The request of the Master Sheet Metal Workers' Association, Syracuse, N. Y., for free charcoal iron tin plate for roofing purposes (Tariff Hearings, first print No. 46, page 6801), while possibly well intended, is not tenable:

1. As it is ordinarily wholly impossible to distinguish charcoal iron tin plate from other qualities, it would encourage deception and evasion of the tariff.

2. United States consular reports show no roofing plates are made in England or Wales from charcoal iron.

3. Several American manufacturers are producing charcoal iron tin plate and the industry would be destroyed.

4. Tin plate for roofing purposes is being produced regularly by American mills of a quality better than any other nation at any time. This product can be secured under guarantees of wearing quality never possible from the Welsh makers.

CONCLUSION.

The American tin plate industry is the youngest in the iron and steel line. It has only been established by much travail. It has been exceptionally adversely treated by former tariffs. It is the item by far most greatly influenced by labor and the peculiarity of greatest consumption at seaboard points. Although begun only 17 years ago under the McKinley tariff of 2.2 cents per pound, the suggested new duty of 1.2 cents shows a reduction of 45 per cent. Any lower duty would entail great hardships upon American labor and capital and tend to cripple the industry.

HIGH-SPEED STEEL.

Statement of Frank B. Smith, Crucible Steel Company of America, Pittsburgh, Pa.

I desire to present as briefly as possible the wishes of our company in regard to the new proposed tariff, and will begin by stating that the principal grades manufactured by us are covered by paragraph 135 of the Dingley tariff bill.

The volume of the business is not very large and amounts to perhaps 300,000 or 400,000 tons a year. It is a class of steel that is higher in price and superior in quality to the ordinary steel called "bar steel." Most of it is crucible and refined high grade open hearth steel. The present duty permits of large importations and is not sufficiently protective. Makers in foreign countries sell to this country at lower prices than they sell to their home consumers, and use this country very often as a dumping ground. Our industry in this way has been made to suffer for years, and the English and German manufacturers do quite a large business in the United States, selling very often at prices which we cannot meet.

The belief that a reduction in rates is inevitable was expressed by William G. Park, the late chairman of this company, when he appeared before the Committee on Ways

and Means and asked to have it made as light as possible, say 10 per cent. off existing duties. We also desire to have a duty placed upon high speed steel, a new article of manufacture, for which there is no protection in the Dingley tariff bill. We propose the following scale and name figures which we think would cover this description of steel:

Steel selling at 20 cents per pound and not over 25 cents per pound, 7 cents per pound; above 25 cents and not over 30 cents per pound, 10 cents per pound; above 30 cents and not over 36 cents per pound, 15 cents per pound; over 36 cents per pound, 25 cents per pound.

The article largely used in the manufacture of this grade of steel is metallic tungsten, which sells at about 75 cents per pound, and this high grade of steel has no duty on it other than the 4.7 cents per pound which is now exacted on all steel valued above 16 cents per pound.

The above expresses the views of all the other manufacturers with whom I have talked regarding the grades of steel manufactured by them, and I believe would be universally satisfactory.

BOLTS, NUTS, WASHERS AND RIVETS.

Statement of C. W. Scofield, Lake Erie Iron Company, Cleveland, Ohio; Charles J. Graham, Graham Nut Company, Pittsburgh, Pa.; Clement R. Hoopes, Hoopes & Townsend, Philadelphia, Pa.; W. F. McKenzie, Upson Nut Company, Cleveland, Ohio; and James Lord, American Iron & Steel Mfg. Company, Lebanon, Pa.

A meeting of bolt, nut and rivet manufacturers was held at Pittsburgh, Pa., December 15 and 16, to consider the question of tariff revision on above items. A committee of six was appointed to secure the views of the manufacturers, to edit them and present them to your committee. In the performance of this duty we recommend that the above items be included in one paragraph, as they are allied lines, and to a great extent made by bolt, nut and rivet manufacturers.

We would state that "finished hinges and hinge blanks" (in paragraph 145), and "horse, mule and ox shoes" (in paragraph 163) have no connection with our industry. Spikes are made to some extent by the above manufacturers, but more largely as a separate industry; therefore we will not make any suggestions about them.

We feel that the items named at the head of this brief—namely, bolts, nuts, washers and rivets—can be properly classed together and bear one rate of duty.

We think that the Dingley tariff is not equitable in its treatment of these items, varying the rate from 1 to 2 cents per pound; we feel that one rate should apply to all of them.

And it is further inequitable in that it applies the same rate to nuts of all sizes and varieties, whether they cost 2 cents or 60 cents per pound—the same criticism applying to bolts, though to a less degree. In explanation of this statement, the word "nuts" includes finished case hardened nuts; the material in these costs from 1½ to 2 cents per pound, while the labor cost in some diameters is 58 to 60 cents per pound.

And with regard to bolts, small sizes, as $\frac{1}{4}$ x 1 in., will cost approximately 10 cents per pound, while larger sizes, say $\frac{3}{4}$ x 15 in., cost approximately 1.9 cents per pound.

To overcome this injustice of classification, we recommend that there be an ad valorem as well as a specific duty.

In making the recommendation we are not unmindful of the fact that the difference in diameters, standards, sizes and threads of items in question, and the small units of sale make America, under present conditions, a difficult field for European competition. But we have a neighbor north of us, whose standards and methods are the same as our own—who has a number of bolt and nut works, with a product greater than can be used in the Dominion of Canada—whose rates of freight to the centers of purchase differ but little from our own. It has so protected the items in discussion as to preserve the market entirely to its own manufacturers, although previous to the adoption of this policy it was a profitable field for our products.

Mexico has also adopted a much higher tariff on our goods for the stated purpose of protecting the bolt and nut works now built and projected in that country.

Under these conditions we recommend that practically the same tariff schedule be applied to these items as is now charged by the Canadian tariff—namely, 75 cents per 100 lb. specific and 25 per cent. ad valorem.

This will be a great reduction from the present schedule on the bolts of greatest tonnage, and a much greater reduction on rivets. On bolts of small diameters and on nuts and washers it would be an advance, due to the ad valorem. But we recommend it because we believe it to be more equitable, and for the purpose of correcting what we think was erroneous in the Dingley tariff.

We sought the views of 34 manufacturers, representing in our judgment 95 per cent. of the country's output of bolts, nuts and rivets, though a much smaller per cent. of washers. Of the 30 replies, 29 agree unreservedly to the

views herein expressed. One replies that he will state his views later.

In regard to the presentation of cost sheets of production in this country, this business is one of such detail that the estimate book of one manufacturer is larger than Webster's Dictionary.

And in regard to securing foreign costs, we have tried in vain to secure them. Even if we had them it would not be possible to take the piece work prices of different countries working on different standards, as to heads, threads, sizes, shapes and diameters, and make an intelligent comparison with the costs of this country.

SAWS.

Statement of E. C. Atkins & Co., Indianapolis, Ind.

At the time we wrote your committee in reference to the manufacture of saws we were not in possession of information which we have since been able to secure. This information is with reference to the cost of manufacturing goods in our line in France and Germany. The difference in cost of manufacture is noted by the difference in wages paid in the United States and foreign countries. In a saw factory there are many different classes of workmen employed. It is necessary to have a large proportion of the workmen come under the head of skilled mechanics.

Sawsmiths in the United States receive not less than 33 1-3 cents per hour, as a minimum required by their union. From 33 1-3 cents per hour their wages vary up as high as 70 cents per hour. The average wages of sawsmiths in our employ would be 47½ cents per hour. The same sawsmiths in France receive 1 franc per hour; in Germany, 4 marks per day for foremen and 3 marks per day for ordinary help.

Saw filers in the United States receive from 30 to 35 cents per hour; in France, 80 to 90 centimes per hour; in Germany, 3 marks per day.

Saw toothers in the United States receive from 25 to 35 cents per hour; in France, from 70 to 75 centimes per hour; Germany, 3 marks per day.

Machinists in the United States in our particular district receive a minimum of 32½ cents per hour, as required by their unions. These same men in France receive 90 centimes per hour.

Common laborers in the United States in factory work receive from 15 to 20 cents per hour, while the same class of labor in France receives not to exceed 5 francs per day.

The per day wages mentioned above mean a day of 10 hr. in every case.

This information is correct and is received at first hand from a representative of our firm who has just returned from a visit to France and Germany, where he took particular pains to find out exactly this information.

The New Pennsylvania Steel Coke Car.

In an effort to provide shippers of coke with an improved car, which can be loaded and unloaded in the shortest possible time, the Pennsylvania Lines west of Pittsburgh have specified that of the recent order for 2200 new cars 1000 should be all-steel cars of new design and of greater capacity than any coke cars hitherto built for regular service.

The main novelty in these cars will consist of four hoppers, with eight openings in the bottom of the car, making the car practically self-clearing. With the doors all open, there will be an open area of 84 sq. ft. This will greatly facilitate unloading. It has been found that three somewhat smaller cars could be unloaded by three men in 15 min. from the time they were placed on the trestle until the engine moved them away. From the time the drop doors were opened until the coke ran out of the car required 1 min. and 45 sec. The four-hopper car is expected to do even better. To facilitate loading it is planned that the old-fashioned coke racks shall be left off these cars, and the sides of the cars will not be as high as in previous designs. This loss is repaired in the greater length, 42 ft., of the new cars. The drop doors are to be provided with operating gear of special design. The total capacity of each of the new cars is 2794 cu. ft., providing for a load of 100,000 lb.

Advices from Spokane, Wash., state that the Germania tungsten mine in Stevens County, is to be reopened after having been closed by litigation for over a year. It is owned by German and American interests and is said to be one of the largest bodies of tungsten ore in the world. The nearest shipping point is Springdale, about 12 miles distant.

TIN PLATE.

Statement of Wm. U. Follansbee, Follansbee Brothers Company, Follansbee, W. Va.; Chas. E. Pope, Pope Tin Plate Company, Steubenville, Ohio; E. T. Wier, Phillips Sheet & Tin Plate Company, Clarksburg, W. Va.; and E. H. Crawford, McKeesport Tin Plate Company, McKeesport, Pa.

This brief represents the independent manufacturers, as follows: Number of companies, 12; aggregate capital, \$10,000,000; total mills, 108; annual capacity, tons, 300,000; annual capacity, boxes, 6,000,000; total employees, 7000; annual pay rolls, \$5,000,000.

The entire tin plate industry of this country employs direct about 2,000 hands and produces about 600,000 tons, or 12,000,000 boxes, valued at \$43,000,000, which requires:

1,400,000 tons ore, 850,000 tons coke, 400,000 tons limestone, 750,000 tons pig iron, 700,000 tons steel; total labor, including transportation.....	\$8,000,000
60 per cent. of which, as shown, is paid direct 600,000 tons tin plate; total labor, including transportation.....	13,000,000

Total wages per annum paid American workmen dependent upon the tin plate industry, over 60 per cent. of which, as shown, is paid direct in making the tin plate alone.....	\$21,000,000
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The suggested duty of 1.2 cents per pound is absolutely necessary to continue the tin plate industry, fairly protect labor and permit a reasonable return upon the capital invested. This is required because of (I) lower foreign labor; (II) lower cost foreign raw materials; (III) smaller capital foreign investment; (IV) freight costs from mills to consuming points. These items are shown in detail as follows:

I.—LOWER FOREIGN LABOR.

Standard of Comparison.—Skilled labor in United States: Wage scales of Amalgamated Association of Iron, Steel and Tin Workers and Tinplate Workers' International Protective Association of America.

Skilled labor in Wales: Wage scales of Tin Plate Section Dock, Wharf, Riverside and General Workers' Union of Great Britain and Ireland.

General labor in United States: As actually paid by a most modern, well equipped mill in the Pittsburgh District taken from the pay rolls for the entire year 1907.

General labor in Wales: Estimated at one-half the rates paid in United States. (Common labor in Wales is unquestionably less than the rate shown by this estimate.)

	Per gross ton	
	United States.	Wales.
Hot rolling.....	\$9.76	\$4.555
Opening .....	.425	.305
Pickling .....	.485	.275
Annealing .....	.87	.666
Cold-rolling.....	.525	.20
General mill.....	.325	.166
White pickling.....	.375	.278
Tinning	1.325	1.245
Washing	1.555	1.245
Rising .....	.88	.466
Assorting .....	.52	.415
Boxing .....	.465	.20
General tin house.....	2.44	1.22
Totals	\$22.95	\$12.73
\$22.95 minus \$12.73 equals \$10.22 per 2240 lb., equals 45.6 cents per 100 lb.		

II.—LOWER COST FOREIGN RAW MATERIALS.

Steel bars from which tin plate is rolled, present market prices as shown by trade quotations:

Cost at mills in United States.....	\$27.50
Cost at mills in Wales.....	21.50

Difference per 2000 lb. finished tin plate.....	\$6.00
Equals 30 cents per 100 lb.	

III.—SMALLER CAPITAL FOREIGN INVESTMENT.

The cost of plant in the United States is just about 50 per cent. greater. Cost of labor, as shown, nearly double. Raw material charges nearly 30 per cent. higher. Interest charges about double.

	United States.	Wales.
To produce 25,000 tons per annum requires capital investment:		
In plant.....	\$500,000	\$333,333
In labor, raw and finished materials, accounts receivable, &c.....	500,000	250,000
Total.....	\$1,000,000	\$583,333

Greater in United States.....	\$416,667	.....
At 6 per cent. = \$25,000; equivalent to per ton output, \$1 = 5 cents per 100 lb.		
Annual charges repairs, upkeep of plant and depreciation.....	\$50,000	\$25,000
Greater in United States, \$25,000 = per ton output \$1 = 5 cents per 100 lb.		

IV.—FREIGHT COSTS FROM MILLS TO CONSUMING POINTS.

Fully two-thirds of the consumption of tin plate in the United States is at the seaboard, New York, Philadelphia, Boston, Baltimore, New Orleans, San Francisco, &c.

Freight from mills in Pittsburgh District at shipping weight of 106 lb., including package as well as contents, as required by the railroads:

To New York at freight rate of 18 cents, equals 19 cents per 100 lb.
To New Orleans at freight rate of 34 cents, equals 34 cents per 100 lb.
To San Francisco at freight rate of 66.2 cents, equals 70 cents per 100 lb.
Average, 41 cents per 100 lb.

Freight from mills in Wales located at seaports at common rate of 9 shillings 6 pence per 2240 lb. of net contents, weight of package not included as permitted by steamship lines to New York, equals 10 cents per 100 lb.

A large portion of the tin plate consumption is seasonable and in regular sizes, for which the requirements can be anticipated by many months, while the size and character of boxes of tin plate make it particularly desirable for ballast, thus permitting as low water freight cost from Wales to New Orleans and San Francisco as to New York, accordingly the freight item from mills to consuming point is very important and may show as high as 60 cents per 100 lb. differential in favor of Wales. With any spirit of fairness to American mills it would appear this factor should not be considered at any less than the average from American mills to seaboard points, as shown above, of 41 cents per 100 lb.

Recapitulation.

I. Lower foreign labor.....	15.6 cents per 100 lb.
II. Lower cost foreign raw materials.....	30 cents per 100 lb.
III. Smaller capital foreign investment.....	10 cents per 100 lb.
IV. Freight costs from mills to consuming points, average.....	41 cents per 100 lb.

Total.....	\$1.266 per 100 lb.
Equivalent to.....	1.27 cents per lb.

The suggested new duty of 1.2 cents per pound is accordingly only fairly protective and by no means prohibitive.

The establishment of the American tin plate industry under a reasonable tariff most emphatically has not increased the cost to the domestic consumer, but on the contrary has unquestionably reduced the price, as shown below:

	Weish tin duty added. 1872-1878.	American tin plate. 1872-1878. 1891-1908. 15% ad valorem. 1ct. per lb. 1.5 cents per lb.
Duty.....	\$7.30	\$4.81 \$3.48

The productive capacity of American mills considerably exceeds the consumption of the tin plate, showing frequent shutdowns and keen competition.

The request of the Master Sheet Metal Workers' Association, Syracuse, N. Y., for free charcoal iron tin plate for roofing purposes (Tariff Hearings, first print No. 46, page 6801), while possibly well intended, is not tenable:

1. As it is ordinarily wholly impossible to distinguish charcoal iron tin plate from other qualities, it would encourage deception and evasion of the tariff.

2. United States consular reports show no roofing plates are made in England or Wales from charcoal iron.

3. Several American manufacturers are producing charcoal iron tin plate and the industry would be destroyed.

4. Tin plate for roofing purposes is being produced regularly by American mills of a quality better than any other nation at any time. This product can be secured under guarantees of wearing quality never possible from the Welsh makers.

CONCLUSION.

The American tin plate industry is the youngest in the iron and steel line. It has only been established by much travail. It has been exceptionally adversely treated by former tariffs. It is the item by far most greatly influenced by labor and the peculiarity of greatest consumption at seaboard points. Although begun only 17 years ago under the McKinley tariff of 2.2 cents per pound, the suggested new duty of 1.2 cents shows a reduction of 45 per cent. Any lower duty would entail great hardships upon American labor and capital and tend to cripple the industry.

HIGH-SPEED STEEL.

Statement of Frank B. Smith, Crucible Steel Company of America, Pittsburgh, Pa.

I desire to present as briefly as possible the wishes of our company in regard to the new proposed tariff, and will begin by stating that the principal grades manufactured by us are covered by paragraph 135 of the Dingley tariff bill.

The volume of the business is not very large and amounts to perhaps 300,000 or 400,000 tons a year. It is a class of steel that is higher in price and superior in quality to the ordinary steel called "bar steel." Most of it is crucible and refined high grade open hearth steel. The present duty permits of large importations and is not sufficiently protective. Makers in foreign countries sell to this country at lower prices than they sell to their home consumers, and use this country very often as a dumping ground. Our industry in this way has been made to suffer for years, and the English and German manufacturers do quite a large business in the United States, selling very often at prices which we cannot meet.

The belief that a reduction in rates is inevitable was expressed by William G. Park, the late chairman of this company, when he appeared before the Committee on Ways

and Means and asked to have it made as light as possible, say 10 per cent. off existing duties. We also desire to have a duty placed upon high speed steel, a new article of manufacture, for which there is no protection in the Dingley tariff bill. We propose the following scale and name figures which we think would cover this description of steel:

Steel selling at 20 cents per pound and not over 25 cents per pound, 7 cents per pound; above 25 cents and not over 30 cents per pound, 10 cents per pound; above 30 cents and not over 36 cents per pound, 15 cents per pound; over 36 cents per pound, 25 cents per pound.

The article largely used in the manufacture of this grade of steel is metallic tungsten, which sells at about 75 cents per pound, and this high grade of steel has no duty on it other than the 4.7 cents per pound which is now exacted on all steel valued above 16 cents per pound.

The above expresses the views of all the other manufacturers with whom I have talked regarding the grades of steel manufactured by them, and I believe would be universally satisfactory.

BOLTS, NUTS, WASHERS AND RIVETS.

Statement of C. W. Scofield, Lake Erie Iron Company, Cleveland, Ohio; Charles J. Graham, Graham Nut Company, Pittsburgh, Pa.; Clement R. Hoopes, Hoopes & Townsend, Philadelphia, Pa.; W. F. McKenzie, Upson Nut Company, Cleveland, Ohio; and James Lord, American Iron & Steel Mfg. Company, Lebanon, Pa.

A meeting of bolt, nut and rivet manufacturers was held at Pittsburgh, Pa., December 15 and 16, to consider the question of tariff revision on above items. A committee of six was appointed to secure the views of the manufacturers, to edit them and present them to your committee. In the performance of this duty we recommend that the above items be included in one paragraph, as they are allied lines, and to a great extent made by bolt, nut and rivet manufacturers.

We would state that "finished hinges and hinge blanks" (in paragraph 145), and "horse, mule and ox shoes" (in paragraph 163) have no connection with our industry. Spikes are made to some extent by the above manufacturers, but more largely as a separate industry; therefore we will not make any suggestions about them.

We feel that the items named at the head of this brief—namely, bolts, nuts, washers and rivets—can be properly classed together and bear one rate of duty.

We think that the Dingley tariff is not equitable in its treatment of these items, varying the rate from 1 to 2 cents per pound; we feel that one rate should apply to all of them.

And it is further inequitable in that it applies the same rate to nuts of all sizes and varieties, whether they cost 2 cents or 60 cents per pound—the same criticism applying to bolts, though to a less degree. In explanation of this statement, the word "nuts" includes finished case hardened nuts; the material in these costs from 1½ to 2 cents per pound, while the labor cost in some diameters is 58 to 60 cents per pound.

And with regard to bolts, small sizes, as $\frac{1}{4}$ x 1 in., will cost approximately 10 cents per pound, while larger sizes, say $\frac{3}{4}$ x 15 in., cost approximately 1.9 cents per pound.

To overcome this injustice of classification, we recommend that there be an ad valorem as well as a specific duty.

In making the recommendation we are not unmindful of the fact that the difference in diameters, standards, sizes and threads of items in question, and the small units of sale make America, under present conditions, a difficult field for European competition. But we have a neighbor north of us, whose standards and methods are the same as our own—who has a number of bolt and nut works, with a product greater than can be used in the Dominion of Canada—whose rates of freight to the centers of purchase differ but little from our own. It has so protected the items in discussion as to preserve the market entirely to its own manufacturers, although previous to the adoption of this policy it was a profitable field for our products.

Mexico has also adopted a much higher tariff on our goods for the stated purpose of protecting the bolt and nut works now built and projected in that country.

Under these conditions we recommend that practically the same tariff schedule be applied to these items as is now charged by the Canadian tariff—namely, 75 cents per 100 lb. specific and 25 per cent. ad valorem.

This will be a great reduction from the present schedule on the bolts of greatest tonnage, and a much greater reduction on rivets. On bolts of small diameters and on nuts and washers it would be an advance, due to the ad valorem. But we recommend it because we believe it to be more equitable, and for the purpose of correcting what we think was erroneous in the Dingley tariff.

We sought the views of 34 manufacturers, representing in our judgment 95 per cent. of the country's output of bolts, nuts and rivets, though a much smaller per cent. of washers. Of the 30 replies, 29 agree unreservedly to the

views herein expressed. One replies that he will state his views later.

In regard to the presentation of cost sheets of production in this country, this business is one of such detail that the estimate book of one manufacturer is larger than Webster's Dictionary.

And in regard to securing foreign costs, we have tried in vain to secure them. Even if we had them it would not be possible to take the piece work prices of different countries working on different standards, as to heads, threads, sizes, shapes and diameters, and make an intelligent comparison with the costs of this country.

SAWS.

Statement of E. C. Atkins & Co., Indianapolis, Ind.

At the time we wrote your committee in reference to the manufacture of saws we were not in possession of information which we have since been able to secure. This information is with reference to the cost of manufacturing goods in our line in France and Germany. The difference in cost of manufacture is noted by the difference in wages paid in the United States and foreign countries. In a saw factory there are many different classes of workmen employed. It is necessary to have a large proportion of the workmen come under the head of skilled mechanics.

Sawsmiths in the United States receive not less than 33 1-3 cents per hour, as a minimum required by their union. From 33 1-3 cents per hour their wages vary up as high as 70 cents per hour. The average wages of sawsmiths in our employ would be 47½ cents per hour. The same sawsmiths in France receive 1 franc per hour; in Germany, 4 marks per day for foremen and 3 marks per day for ordinary help.

Saw filers in the United States receive from 30 to 35 cents per hour; in France, 80 to 90 centimes per hour; in Germany, 3 marks per day.

Saw toothers in the United States receive from 25 to 35 cents per hour; in France, from 70 to 75 centimes per hour; in Germany, 3 marks per day.

Machinists in the United States in our particular district receive a minimum of 32½ cents per hour, as required by their unions. These same men in France receive 90 centimes per hour.

Common laborers in the United States in factory work receive from 15 to 20 cents per hour, while the same class of labor in France receives not to exceed 5 francs per day.

The per day wages mentioned above mean a day of 10 hr. in every case.

This information is correct and is received at first hand from a representative of our firm who has just returned from a visit to France and Germany, where he took particular pains to find out exactly this information.

The New Pennsylvania Steel Coke Car.

In an effort to provide shippers of coke with an improved car, which can be loaded and unloaded in the shortest possible time, the Pennsylvania Lines west of Pittsburgh have specified that of the recent order for 2200 new cars 1000 should be all-steel cars of new design and of greater capacity than any coke cars hitherto built for regular service.

The main novelty in these cars will consist of four hoppers, with eight openings in the bottom of the car, making the car practically self-clearing. With the doors all open, there will be an open area of 84 sq. ft. This will greatly facilitate unloading. It has been found that three somewhat smaller cars could be unloaded by three men in 15 min. from the time they were placed on the trestle until the engine moved them away. From the time the drop doors were opened until the coke ran out of the car required 1 min. and 45 sec. The four-hopper car is expected to do even better. To facilitate loading it is planned that the old-fashioned coke racks shall be left off these cars, and the sides of the cars will not be as high as in previous designs. This loss is repaired in the greater length, 42 ft., of the new cars. The drop doors are to be provided with operating gear of special design. The total capacity of each of the new cars is 2794 cu. ft., providing for a load of 100,000 lb.

Advices from Spokane, Wash., state that the Germania tungsten mine in Stevens County, is to be reopened after having been closed by litigation for over a year. It is owned by German and American interests and is said to be one of the largest bodies of tungsten ore in the world. The nearest shipping point is Springdale, about 12 miles distant.

A Heavy Double Stroke Open Die Header.

The No. 4 double stroke open die header, a recent product of the E. J. Manville Machine Company, Waterbury, Conn., is of the same general type as the machine described in detail in *The Iron Age*, August 23, 1906.

The gripping box, containing the toggle mechanism for operating the dies, is cast solid with the bed to give greater strength and rigidity, and the adjustment for pinching up the toggles has been carried outside of the machine against the stationary joint of the toggle, at *a*, Fig. 3. Another improvement is the use of a single return pin, seen at *g*, in the dies, replacing the two or three pins formerly used, according to the length of the die. The

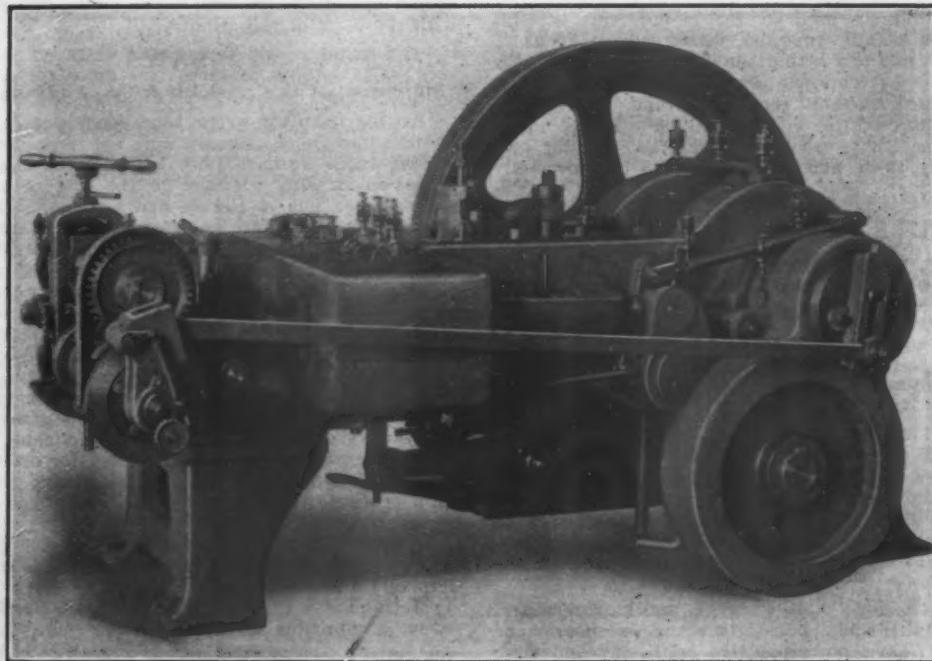


Fig. 1.—The New No. 4 Double Stroke Open Die Header Built by the E. J. Manville Machine Company, Waterbury, Conn.

It is much heavier, however, being designed for cold heading $\frac{1}{2}$ -in. wire, and contains several changes in mechanism and construction. A notable improvement is the introduction of a breaker plate connection in the gripping mechanism which replaces the slip connection and constitutes a simple and effective safety device. It is of such a form that all the necessary pressure is taken through a cast iron plate of proper strength. If a wire

pin has a forged T head, the T being the length of the largest die. This arrangement insures the dies remaining parallel to one another at all times. With this arrangement only a single stop and its adjusting screw are needed.

The foot brake for use in stopping the balance wheel is a novelty. In other details the design and mechanism closely resemble those of the header previously described.

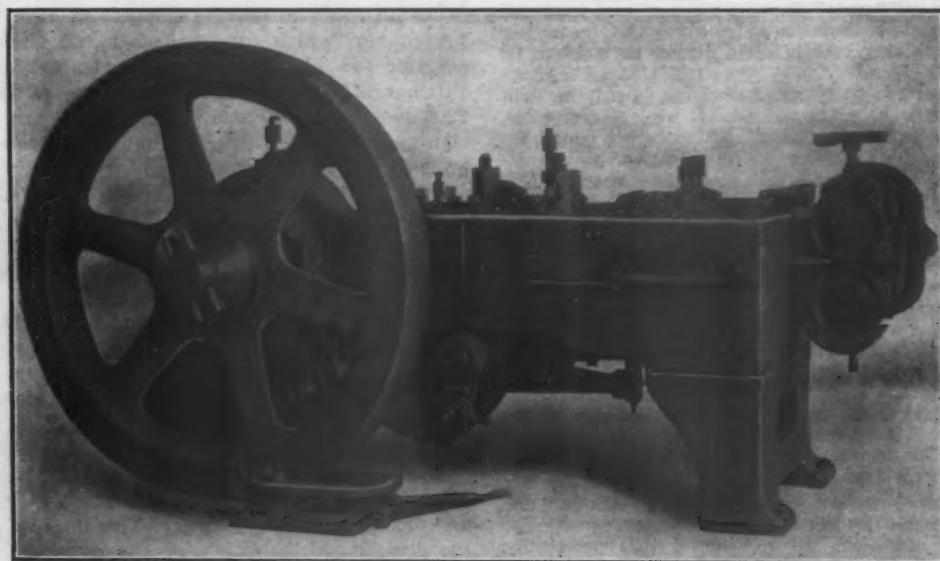


Fig. 2.—View of the Opposite Side of the No. 4 Double Stroke Header, Showing the New Foot Brake.

accidentally gets between the dies so that they cannot close the plate breaks and drops to the floor, instantly disconnecting the two ends of the connection, the driving end continuing to move while the opposite end is at rest. At the same time the breaking of the plate causes the feed pawl to lift automatically out of engagement with the ratchet, instantly stopping the wire from feeding. Figs. 1 and 2 are views of opposite sides of the machine.

The breaker connection is seen in Fig. 3. The joint connecting the bell crank with the gripping mechanism for operating the dies consists of a yoke, *b*, connection between which and the bell crank is made by the rod *c*, having a head, *d*, against which rests the breaker plate *e*. The head is deeply and widely slotted, the plate resting against the two shoulders. To make the connection complete the heavy bolt *f*, which serves as an adjusting screw, must be tight against the breaker plate. The re-

removal of the plate breaks the connection, the head of the adjusting bolt playing within the recess of the rod head and the toggle motion remaining idle. Thus, as already stated, the presence of wire between the dies so that they cannot close, causes the weakest member in the train, the plate, to be broken and dropped to the floor. In this position of the dies the toggles are in the most advantageous position for withstanding the strain, which being directly imparted to the breaking plate causes it to shatter. The plate is easily replaced and there is no difficulty of adjustment. The normal position of the head within the yoke is firm against the shoulders, and it is this position that determines the adjustment. Therefore though the new breaker plate may not be of exactly the same thickness as its predecessor, it makes

The new brake for the balance wheel is seen in Fig. 2. The heavy wheel on the larger sizes of machine is apt to stop on a dead center. This can be prevented by means of this brake by pressing down on the pedal lever at the proper moment. The brake acts like a pair of tongs. The two arms pivot on standing pins. The pressure of the lever operates a wedge, which spreads apart the curved ends of the arms and forces the wooden faces of the opposite ends against the wheel rim, quickly overcoming the momentum.

The standard sizes of dies for the machines are $2\frac{1}{2}$ in. square; diameter of both first and second punches, $2\frac{1}{2}$ in.; stroke of gate, 8 in.; diameter of feed rolls, 10 in.; section of frame, 7 x 16 in.; size of wheel, 60 x 8 in.; weight of wheel, 2500 lb.; rivets per minute, 55; revolu-

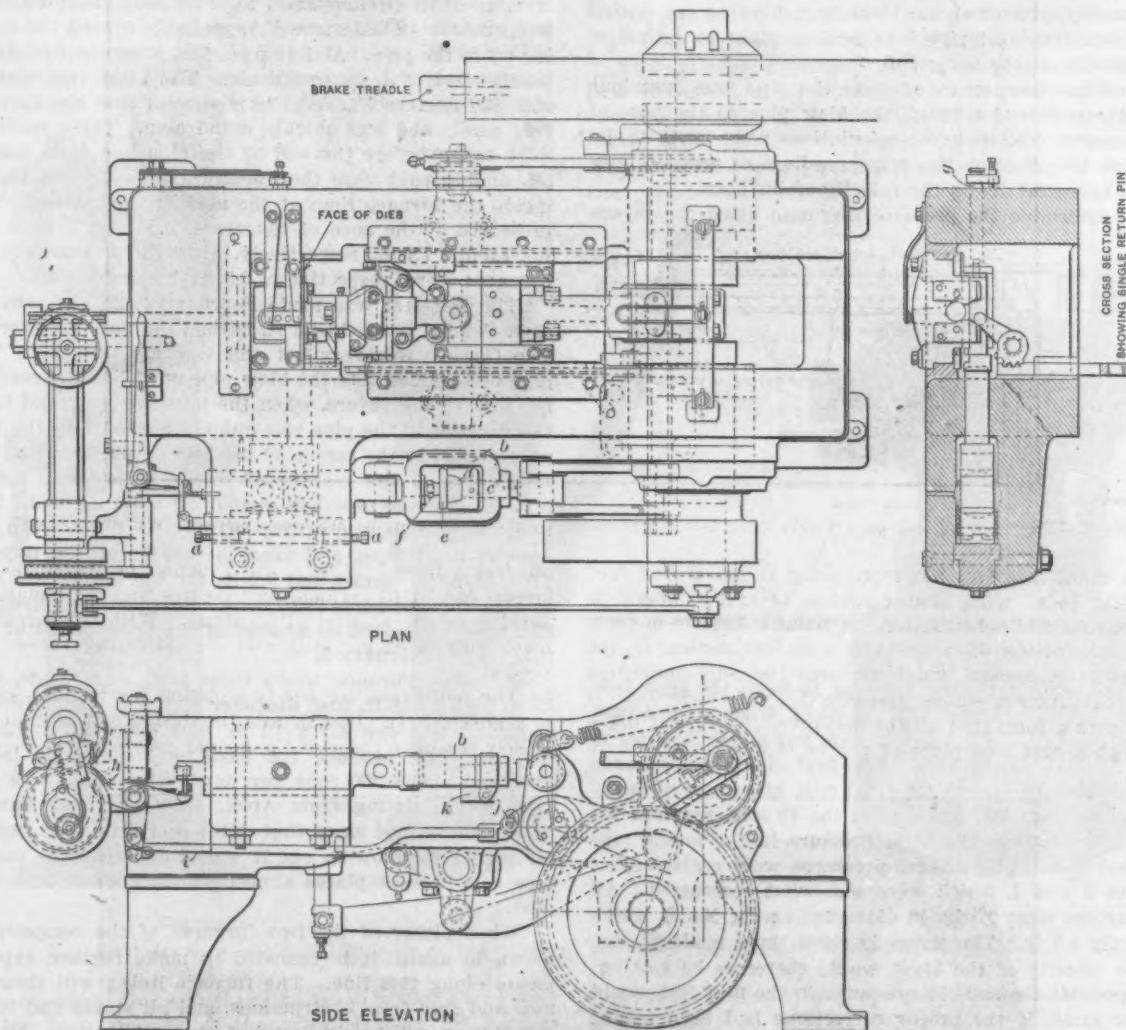


Fig. 3.—Plan, Elevation and Cross Vertical Section of the No. 4 Header.

no difference; all that is required is to bring the adjusting screw against the plate as it rests on the shoulders of the head.

Attached to the sickle *h*, Fig. 3, operating the pawl which actuates the ratchet wheel that feeds the wire to the dies, is the connecting rod *i*, in the end of which is a slot, *j*, in which rests the connecting pin. This rod oscillates with the feed. When the pin is in the upper position in the slot the length of the rod *i* is $\frac{1}{4}$ in. less than when in the lower position. This difference is just sufficient so that with the greater length the pawl cannot engage the ratchet and consequently the machine cannot feed. On the bottom of the yoke is the swinging weight *k*, which while the machine is operating is held up by a latch. The action of the breaker plate when it ruptures is to cause the latch to release the weight, which in falling interferes with and lengthens the connecting rod *i* by forcing it downward; in other words, to the upper slot position. The feed must stop instantly and remain out of operation until the machine is again in condition for working. Thus the breaking of the plate performs the double function of stopping the action of the dies and the feed of the wire to them.

tions of wheel, 110; net weight, 21,000 lb., and floor space, $6\frac{1}{2} \times 10$ ft.

A Rust Preventive Tested by a Flood.—Ordinarily the man in charge of the machinery equipment of a machinery shop or manufacturing plant has enough to do to keep down the cost of depreciation from use and oxidation without taking into account such unusual conditions as flood and fire, and the increased resultant rusting of machinery, which would ordinarily follow. But when a flood came and covered the floor of the machine shop of the Birmingham Iron Foundry, at Derby, Conn., those in charge were glad to note the practical working test that had been unwittingly given to a rust preventive known as Anti-Rust, which had been used to protect the highly polished rolls of a three-roll calender, standing on the erecting floor. When the water, which had reached the height of the lower roll, had subsided, it was found on examination that the delicate surface protected by the coating was not harmed in any way. Anti-Rust is made up ready for use by F. L. Melville, 192 Front street, New York.

Furnace Blast Pressure Tests.*

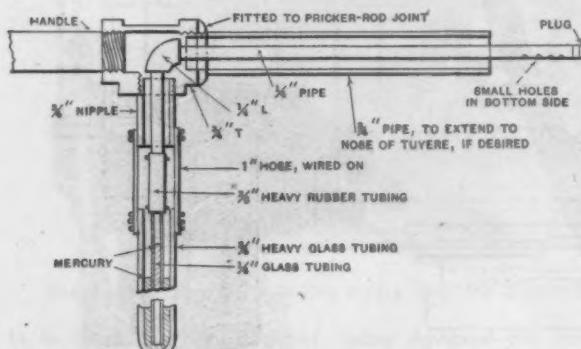
Blast Pressure at the Tuyeres and Inside the Furnace.

BY R. H. SWEETSER, COLUMBUS, OHIO.

At the suggestion of J. H. Frantz, the general manager of the Columbus Iron & Steel Company, a test was made at the East Furnace of the company to determine whether there was any difference in blast pressure at the different tuyeres. The apparatus used for this test was not sensitive enough to give accurate results. It consisted of a small pressure gauge mounted on a $\frac{3}{8}$ -in. gas pipe. A hollow plug, fitting into the peep hole of the tuyere cap, prevented the blast from blowing out during the test. The test pipe was held in place by means of the handle on the outer end.

For the first series of tests the pipe was just long enough to extend through the blow pipe to the nose of the tuyere. No checks or calculations were made to determine the effect on the gauge readings of pressure produced by variations in the velocity of the blast.

To determine the pressure, one man lifted the tuyere



Sketch of Annular U Gauge for Determining Differences in Blast Pressure.

cap and another pushed the pipe through the peep hole till the hollow plug was tight in place, when a third took the reading on the gauge. It took but a few minutes to go all round the furnace. The first observations, made January 24, 1908, were taken 30 min. after a very heavy slip in the furnace; and during the 19 min. required for the eight readings the blast pressure in the bustle pipe dropped 1 lb. The highest pressures were registered at tuyeres 2 and 3, which were somewhat obstructed. All the tuyeres were 5.5 in. in diameter, except No. 8, which was only 4.5 in. The errors in these three readings, due to the velocity of the blast, would therefore be smaller. It is possible that all the pressures in the first test would be the same, if the proper corrections had been made; but since no such corrections were made, it is not safe to draw conclusions as to the relative pressure at all the tuyeres. Although the end of the pipe became hot, it was not injured; and the same pipe served to test all eight tuyeres.

After the first experiment, it was decided to test the blast pressure beyond the nose of the tuyere, and for this purpose longer $\frac{3}{8}$ -in. pipes were provided, the first of which extended 7.75 in., and the others respectively 1 ft. 7.75 in., 2 ft. 6.5 in., 3 ft. 7.75 in., and 5 ft. beyond the nose of the tuyeres.

On January 28, 1908 (the furnace being hot and working well, except that tuyere 3 was plugged with iron and cinder, in consequence of a very heavy slip four days before), two tests were made with the end of pipe projecting 7.75 in. and 1 ft. 7.75 in. respectively beyond the nose of the tuyeres. There seemed to be little difference between the pressure at the nose of the tuyeres and the pressure a short distance inside the furnace. There was an apparent drop of 2 lb. in pressure between the bustle pipe and the nose of the tuyere, the average of the former being 10.5 lb. and of the latter, 8.5 lb. The output of the furnace on that day was normal (250.4 tons).

* From a paper read at the New Haven meeting of the American Institute of Mining Engineers, February, 1909.

On January 29 the pressure at the nose and at 2 ft. 6.5 in. beyond the nose was taken for all the eight tuyeres. In front of No. 2 the stock was a little "raw," and slag could be seen dropping down. When the pipe was pushed in beyond the nose of the tuyere the end became plugged with slag, and immediately the gauge showed 12 lb. pressure, due to the expansion of the air in the closed pipe. As soon as the cinder had been cleaned out of the pipe the experiments were continued.

On February 3 another test was made, with the end of the pipe projecting 3 ft. 7.75 in. beyond the nose of the tuyeres. The furnace was very hot and working well. The reading of the blast gauge was taken as quickly as possible, but 8 ft. of the pipe burned off before it could be withdrawn. It was almost time for the first cast of iron, and this circumstance, together with the high blast temperature (860 degrees F.), probably caused the burning off of the pipe. At 1.47 p.m., just after the first flush, another set of tests was made. The blast temperature was 830 degrees F., and the pipe went into the furnace very easily and was quickly withdrawn. Three readings were taken before the end of the pipe had been melted off, and in each case the apparent pressure was higher inside the furnace than at the nose of the tuyeres. The pressures at the nose of tuyeres 4, 5, 6 and 7 were 6.4, 7.5, 7.5 and 7.7 lb., respectively, while the pressures in the furnaces were, respectively, 6.5, 8, 7.6 and 7.8 lb.

The last test was made February 4, 20 min. after a cast. The pipe reached 5 ft. beyond the nose of tuyere 5. The furnace was very hot and working smoothly. The pipe was pushed into the blow pipe until the end reached the nose of the tuyere, when the pressure was read from the gauge, and the pipe was quickly pushed into the furnace almost to the center of the hearth. There was just time to catch the reading of the blast pressure before 5 ft. 1 in. of the pipe had melted off from the end. The two readings showed a drop of only 0.8 lb. between the nose of the tuyere, and near the center of the furnace 7.5 lb. for the former and 7.2 lb. for the latter. On this day the furnace made 292.7 tons. Further experimenting had to be postponed on account of the blowing out of the furnace on February 5.

The East Furnace, where these tests were made, was 75 ft. high by 18 ft. bosh diameter and 12 ft. hearth diameter, and had one 4.5 x 12 in. and seven 5.5 x 12 in. tuyeres. The product (of basic and malleable iron) averaged about 250 tons per day. The lining was old (the inwall dating from April, 1908, the bosh having been once relined since that date) and was worn out in places. After blowing out it was found that the bustle pipe was in some places almost wholly choked with flue dust.

When either of the two furnaces of the company is blown in again, it is intended to make further experiments along this line. The furnace lining will then be new and free from obstructions, and all stoves and blast connections will be clean and of known diameter. Under the conditions of the above tests, the results obtained are not regarded as possessing much value in themselves, but they point the way to further investigations which may afford important guidance in the determination of proper diameters for tuyeres, blowpipes and blast connections.

Suggested Apparatus for Testing Pressure.

In a postscript the author says that his paper was submitted in manuscript to a member of the Institute, qualified by long practice to give advice on this subject, but unable at this time to engage in a formal discussion of it. However, the following summary of his remarks is given without name:

I do not know of any other investigations along this line except some very thorough ones made by Fliegner on "The Flow of Air Through Orifices," which have always been considered authoritative, and which take account of both the absolute pressure and the absolute temperature. J. E. Johnson, Jr., in his "Notes on the Physical Action of the Blast Furnace," gives an approximate formula for the drop of pressure in passing through the tuyeres. For the pressure drop through the tuyeres alone, I would trust this formula in preference to your experimental results, because the conditions of your ex-

periment, as you frankly state them, were so exceedingly bad, in comparison with what they could be made, and were made, by Fliegner.

I think it is a mistake to take only the pressure in the bustle pipe. What I should want to know in such a case would be the difference in pressure between the blow pipe and the inside of the furnace, which can be easily determined by the use of a U-gauge, filled with mercury and arranged about as shown on the accompanying sketch, the outer tube being filled with water above the mercury to above the top of the hose before screwing the nipple into the T. This would give direct readings of differences of pressure, which are very much more desirable than those of small differences in large pressures, taken from gauges which may or may not be accurate. The nicest form of U-gauge for this job is the annular one, in which one pressure takes effect in the central tube and the other in the annular space. This makes the difference extremely easy to measure and compensates for any error in holding the gauge plumb,

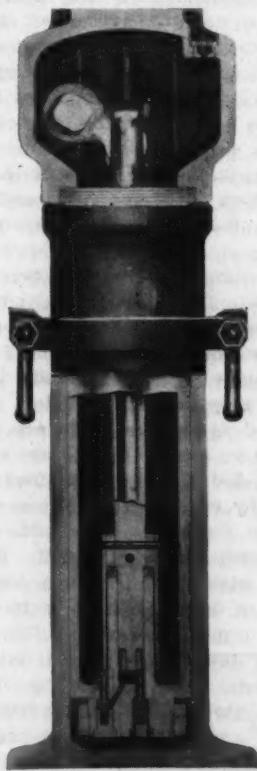


Fig. 1.



Fig. 2.



Fig. 3.

Sectional View and Exterior Views of Two Types of the Duff-Bethlehem Forged Steel Hydraulic Jacks.

&c. Another thing which occurs to me is that as a result of the high velocity of the entering blast the suction effect on the open end of the tube will give an appreciable error, to avoid which the test tube should be plugged on the end and its side drilled full of small holes with rounded edges.

I suppose everybody will be at first inclined to reject, as due to errors of observation, the indication given by the experiments you report, that the pressure inside the furnace is higher than that at the tuyeres. But this is not necessarily true. The high velocity of the air jet may be transformed back into pressure inside the furnace; in fact, that is what its velocity is for. This point can also be determined with the differential gauge by using two concentric pipes, the outer one of which reaches to the nose of the tuyeres and the other to any desired distance beyond that, in the furnace.

I shall be glad to see your paper published for the discussion that it ought to bring out. This would be all the more valuable if it should induce you or some one else to make more extended and accurate tests, in which the friction in the bustle pipe and stocks was eliminated. The ordinary formula for the flow of air enables us to design bustle pipes so that there need be no appreciable loss of pressure when they are clean, and, in a case of this kind, such an unnecessary loss only tends to cloud the value and diminish the interest of the investigation.

The Duff-Bethlehem Forged Steel Hydraulic Jacks.

A recent addition to the line of jacks manufactured by the Duff Mfg. Company, Pittsburgh, Pa., which includes the Barrett jacks and the Duff ball bearing screw jacks, is the Duff-Bethlehem forged steel hydraulic jacks, two types of which are illustrated herewith. They were designed and perfected by the Bethlehem Steel Company, who do the special forging necessary, and patents have been granted covering their special features and construction. Some claims made for these jacks are that imperfections and troublesome conditions are entirely avoided; that they weigh from 30 to 60 per cent. less than other hydraulic jacks of equal lifting capacity and stroke, due to the forged steel construction, and that they provide greater strength, capacity and durability.

The cylinder of the jack is forged integrally with its base or bottom, obviating a joint at that point. The ram also has a solid bottom forged integrally with the pump socket, insuring closure of the ram piston from the pump socket. There are only two small packings in the entire construction, and, as joints are also eliminated,

there is no chance for leakage and no expense for renewal of packings.

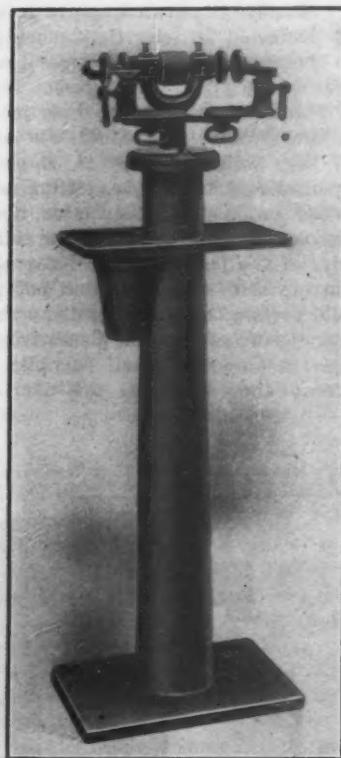
By the location of the valves, shown in the sectional view, Fig. 1, the jacks are capable of extending their full length in a vertical, horizontal or inclined position, without any adjustment whatever, and all sizes will operate at any angle. In the operating mechanism a minimum number of parts of simple and strong construction are employed, and any part may be easily replaced if necessary without special tools. The valves may be attended to without removing the packing and the packing without removing the valves. The valves are positive and require no special adjustments or parts to insure their operating under all conditions. The load may be tripped or may be lowered as slowly as desired, or stopped at any point when lowering.

The jacks are made of open hearth fluid compressed forged steel and bronze, and their inside working parts are drop forgings. Fig. 2 shows the standard form. The low or telescopic jack, Fig. 3, represents the highest type developed by the company, and is fitted with an improved duplex pump automatically regulating the change of speed proportional to the load being lifted. It is made regularly with capacities ranging from 30 to 300 tons, and in higher capacities if required. The Duff Mfg. Company's line of hydraulic jacks is stated to cover practically all types of lifting jacks for every possible condi-

tion and lifting purpose. They range in lifting capacities from a few hundred pounds to hundreds of tons.

The Calder Grinder.

A new grinder is being manufactured by George H. Calder, Lancaster, Pa., designed with particular atten-



A New Emery Wheel Stand Built by George H. Calder, Lancaster, Pa.

tion to making it strong and rigid. The columns are of an improved design and are cast in one piece; the head is of the same size as the base. The table is 5 in. lower

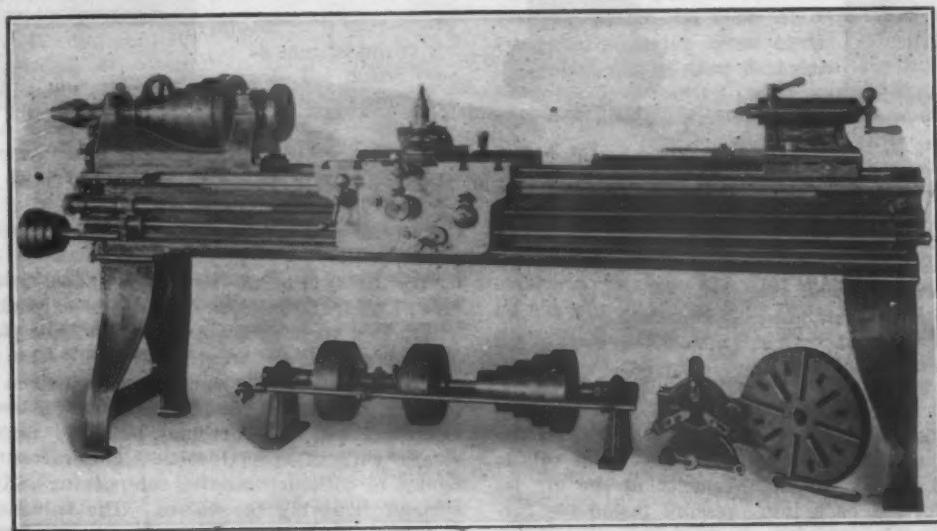
machine swings a 6 x 1½ in. or 8 x ½ in. wheel; the larger sizes take wheels up to 14 in. in diameter. The distance between the wheels on the smaller size machines is 7 in.; length of bearing, 2 in., and diameter of spindle in bearings, ¾ in., which is increased to 5/8 in. in the collars. The Nos. 1 and 2 machines, which are belt driven and weigh complete about 75 lb., are now ready for the market, and those of the larger sizes will shortly be ready.

The Miami 15-In. Engine Lathe.

A new product of the Miami Valley Machine Tool Company, Dayton, Ohio, is a 15-in. size of standard engine lathe. It differs only in point of dimensions from the company's 13½-in. lathe, and while suitable for general manufacturing was designed especially for use in automobile garages and general repair shops.

The lathe has an actual swing over the bed of 16½ in. The headstock is massive, and has a long bearing to resist chatter or vibration under heavy cuts. The spindle has a No. 4 Morse taper, is made of high-grade crucible steel, bored with a 1½-in. hole, and runs in large phosphor bronze bearings. The front bearings are 2½ x 4 in., and the rear bearings 1 11-16 x 3 in. The cone pulley has five steps of 3 9-16, 4 13-16, 6 9-16, 7 7-16 and 8 ¼ in. in diameter for a 2 ¼-in. belt. The back gear ratio is 9.6 to 1. The tailstock is of the overhanging and setover design, and will admit using the compound rest at right angles.

The carriage is of T-slot design, with an exceptionally long bearing. It is gibbed both front and back, and it is claimed that it will not bind or twist when the heaviest cuts are being taken. Threads can be cut from 5 to 40 per inch, including 11½ to the inch pipe thread. All threads can be cut without stopping or reversing the lathe. In both the head and apron the feeds are reversible, and it is impossible to engage the screw and feed rod at the same time. Being geared the feed is positive, and is made active by engaging a gear on the lead screw to a gear on the feed rod. The lathe is equipped with a compound rest, or a plain rest. The accessories include follow and steady rests, change gears, large and small face plates, a double friction counter-



The New 15 In. Standard Engine Lathe Built by the Miami Valley Machine Tool Company, Dayton, Ohio.

than the head to reduce the chance of breaking a wheel by having a casting or other work on the table jammed under the wheels. The spindle of the grinder is of high carbon machinery steel. The boxes are split and arranged to take up wear. Tight joints and covers preclude the possibility of dust getting to the bearings. The latter in the smaller sizes of the grinder are plain, but in the larger ones are babitted. The machines are carefully finished throughout; the castings present a smooth surface and are finished with eggshell gloss.

This grinder is being made in five sizes, the No. 1

shaft and wrenches. The weight of the machine is approximately 1600 lb. for a 6-ft. bed.

Of 563,672 gross tons of pig iron produced in Canada in 1908, 335,410 tons was basic iron and 112,811 tons was Bessemer iron. These figures compare with 341,257 and 145,910 tons respectively in 1907. Of 16 completed blast furnaces in Canada at the end of 1908 10 were in blast and six were idle. One furnace was projected and two furnaces were partly erected, though work on these was suspended some time ago.

Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, on the evening of March 3, with a representative attendance of iron and steel foundrymen, both local and from nearby cities. In the absence of President Devlin, George C. Davis occupied the chair. The Committee on Specifications for Pig Iron reported progress; criticisms from the foundrymen in all branches of the iron and steel trade, on the scheme previously submitted by the committee, particularly when the specifications do not appear to fully meet the individual cases, were requested. Such communications should be addressed to Walter Wood, chairman, 400 Chestnut street, Philadelphia, at once, as the committee desires to get its final report in shape for the coming convention of the American Foundrymen's Association, to be held in Cincinnati, Ohio, during the week of May 17.

The following named concerns, having presented petitions for membership in the association, were balloted for and unanimously elected: Chester Steel Casting Company, Chester, Pa., represented by S. S. Knight, manager; Federal Steel Foundry Company, Chester, Pa., represented by J. H. F. Dixon, secretary-treasurer, and Brylgon Steel Casting Company, New Castle, Del., represented by Andrew Bryson, president.

The paper presented at this meeting was entitled "A Miniature Open Hearth Furnace and Its Adaptation to the Production of Small Tonnages of Light Steel Castings Cheaply and Satisfactorily," by W. M. Carr of Carr & Speer, metallurgical engineers, New York. This paper was printed in full in *The Iron Age* of February 11, page 466. In discussion it was brought out that the steel made in the Carr furnace is hotter, that is, the ladle temperature is higher than that of steel made in the ordinary acid open hearth process, and that while castings weighing from 45 to 50 lb. had been poured most successfully by means of a lip ladle, leaving no skull, small thin castings such as are poured with steel made by some of the baby Bessemer processes had not yet been experimented with. The percentage of loss in metal in operating a 500-lb. open hearth furnace of the Carr type, using a mix of approximately 66 2/3 per cent. scrap and 33 1/3 per cent. pig iron, was said to be 8 1/2 per cent. slightly greater than in general open hearth practice. The adaptability of a furnace of such capacity, particularly when moderate quantities are desired of castings of vanadium, manganese, titanium or other steel of special composition, was brought out. A vote of thanks was extended to Mr. Carr at the close of the discussion.

An expression was asked by the chairman as to the general condition of the foundry business and the effect the recent cut in steel prices had had on the demand for castings. Generally speaking, those making castings for the textile industry reported quite active conditions; municipal and architectural castings were in fair demand; in other lines the trade has not been so good, machinery castings particularly having been in light demand, while steel casting plants reported very unsatisfactory conditions. Buyers await further developments before purchasing beyond immediate requirements.

The American Steel & Wire Company has secured another of the properties of the defunct National Steel & Wire Company. It will be remembered that some time ago the first named company took over the wire and wire nail plant at New Haven, Conn. It has now secured the plant and business of the Pacific Steel & Wire Company, Oakland, Cal. This company manufactures wire rope and other wire specialties. The report has been in circulation that the plant of the De Kalb Fence Company, De Kalb, Ill., another of the subsidiaries of the National Steel & Wire Company, was included in the purchase of the Pacific Steel & Wire Company, but this proves to be incorrect.

Announcement was made last week that the equipment order of the New York Central lines for 1909 will

include 5450 freight cars, 203 passenger cars and 71 locomotives. Of the above, contracts have already been awarded for 3350 freight cars. Of equipment yet to be placed are 1000 box cars and 1000 flat cars. The Canadian Pacific is reported to have ordered 500 steel cars from the Dominion Car & Foundry Company. The Minneapolis & St. Louis has ordered 50 box cars and 100 gondola cars. The Erie is inquiring for 30 steel under-frame express cars and 20 gondola cars. The Soo Line has given a contract for repairing 400 freight cars.

Two Industrial Expositions.

An exposition of products made in Cleveland, Ohio, will open June 7 and continue two weeks. The list of applicants for space already numbers over 200, the applications coming from industrial concerns having an aggregate of invested capital amounting to over \$90,000,000. Of the exhibitors already enrolled about 75 are in the metal working lines. These include practically all the builders of machine tools and heavy machinery in the city, as well as makers of hardware, specialties and other metal products. The display promises to be unique in the history of home product expositions in the diversity of manufactures shown. It is estimated that 125,000 different articles come out of the city's 3500 shops. It will require two large buildings to accommodate the exhibits. The Exposition Committee has chosen Central Armory, the largest available hall in the city, and will erect a temporary exposition building diagonally across the street. These two buildings will be connected by a bridge concealed by the ornamental *façade* spanning the street between the buildings, beneath which pedestrians and vehicles may pass. The area of the two halls will be 114,655 sq. ft., the greatest amount of space ever devoted to an exhibition of the manufactures of one city.

In Mechanics Hall, Worcester, Mass., preparations are being made for the mechanical exposition which is to run from March 27 to April 3. It will be one of the most interesting expositions held in Massachusetts in many years. A large number of prominent manufacturers have taken space and will give practical illustrations of the manufacture of their products. Great generators have been installed which will provide the electric power for driving the many pieces of machinery which will be in operation on the floors of the building. A 30-ft. electric house, fitted with all modern electric devices, will be an attractive feature in one of the halls. Some of the electric devices have never before been exhibited.

The Cleveland Metal Trades.

The annual meeting and banquet of the Cleveland branch of the National Metal Trades Association, held at the Colonial Hotel on the evening of March 4, proved a very successful and enjoyable affair. About 75 members were present. Reports regarding business conditions and the affairs of the branch were made by George Bartol, the retiring president, and Philip Frankel, the secretary. They showed the branch to be in good financial shape. In spite of unsatisfactory business conditions, there has been a net loss of but one in membership in the past year.

Officers for the ensuing year were elected as follows: President, L. D. Weaning, Variety Iron & Steel Company; vice-president, W. C. Bruce, Bruce-Meriam-Abbott Company; treasurer, C. J. Snow, MacBeth Iron Company; secretary, Phillip Frankel. In addition to the president, vice-president and treasurer, the following were chosen as members of the Executive Board: George Bartol, Otis Steel Company; L. H. Kittridge, Peerless Motor Car Company; Thomas P. Robbins, Cleveland Hardware Company; Walter D. Sayle, Cleveland Punch & Shear Works Company, and Fred R. White, Baker Motor Vehicle Company. Following the business session an address was made by Rev. Paul F. Sutphen. The incoming president spoke on the work of the association, and remarks were made by other members. Charles E. Adams acted as toastmaster.

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A High Rate of Pig Iron Production.

The merchant blast furnaces of the country made 100 per cent. more pig iron last month than in February, 1908, while the steel works furnaces increased their output of February last year by 50 per cent. It is plain that the merchant furnace production is now well beyond the present rate of consumption of merchant pig iron or any rate that may be expected in the near future. While the disparity between the production of pig iron at steel works blast furnaces and the requirements of connected steel plants and finishing mills is less marked, there is a question also whether the large steel companies will not soon be face to face with the necessity of some curtailment. Among merchant furnaces signs of a halt already appear, and when the available figures are studied it will be seen that either a good many furnaces should go out or the output of rolling mill and foundry products should show a marked increase if the pig iron market is to be kept in adjustment to conditions in other lines. We question if furnacemen generally appreciate how close an approach has been made to the rate of pig iron production in the record breaking months preceding November, 1907. To give an idea of just what has happened in the past two years we give, month by month, beginning with January, 1907, the daily rate of production by the coke and anthracite furnaces of the country:

Daily Rate of Pig Iron Production by Months.—Gross Tons.			
	Steel works.	Merchant.	Total.
January, 1907.....	45,368	26,781	71,149
February	47,068	25,970	73,038
March	45,962	25,859	71,821
April	48,226	25,659	73,885
May	47,422	26,626	74,048
June	48,574	25,912	74,486
July	46,857	25,906	72,763
August	46,635	25,959	72,594
September	47,238	25,545	72,783
October	48,855	26,284	75,139
November	36,137	24,800	60,937
December	21,273	18,542	39,815
January, 1908.....	21,432	12,286	33,718
February	25,717	11,446	37,163
March	27,145	12,474	39,619
April	24,185	14,104	38,289
May	24,505	18,098	37,603
June	23,923	12,521	36,444
July	25,762	13,525	39,287
August	28,952	14,899	43,851
September	31,117	16,183	47,300
October	32,217	18,337	50,554
November	32,705	19,890	52,595
December	35,172	20,986	56,158
January, 1909.....	35,983	21,992	57,975
February	38,367	22,610	60,977

The steel works furnaces made in the 10 highly prosperous months ending with October, 1907, an average of 47,221 gross tons of pig iron a day. Last month's rate, 38,367 tons a day, was thus 81 per cent. of this high average. The merchant furnaces in the same 10 months produced an average of 25,950 tons a day. Their daily rate last month was 22,610 tons, or 87 per cent. of what they were doing under the high pressure of prosperity. Cur-

rent mill and foundry operations, estimated at 50 to 60 per cent. of the rate in the first 10 months of 1907, indicate that pig iron has quite outrun the conditions in lines on which it depends.

Our February pig iron production was at a yearly rate of 22,250,000 tons for coke and anthracite iron, or a total of 22,500,000 tons if charcoal iron be estimated at the rate of 1908, which was 250,000 tons. To know something of what such a pig iron output means in terms of finished materials, reference may be had to the year 1905, when the United States produced 22,992,380 gross tons of pig iron, or at a rate only 2.2 per cent. more than that of February. We find that 1905 was a year of 3,375,000 tons of steel rails, 1,600,500 tons of structural shapes and 3,530,000 tons of plates and sheets. It is plain that 1909 will come far short of duplicating these figures. In the same year 1905, 168,000 cars were built in the United States and Canada, and 5491 locomotives, whereas last year the output of cars and locomotives was 78,000 and 2343, respectively, and the present rate of operation of car and locomotive works is very far from promising such totals for this year as those for 1905. In 1905, also, lake shipyards were full of work, while this year the prospect is for the employment of only a fraction of the capacity of these yards.

The increase in the number of furnaces in blast since June 1, 1908, affords one means of gauging the expansion of our pig iron production in the past nine months. The figures below show that the increase between June 1 and February 1 was 95:

	Furnaces in blast.	Furnaces in blast.	
June 1, 1908.....	139	November 1.....	200
July 1.....	151	December 1.....	210
August 1.....	161	January 1, 1909.....	219
September 1.....	179	February 1.....	234
October 1.....	188	March 1.....	232

Such comparisons as have been made above must be resorted to in the absence of any authentic statistics of stocks. However, information on the recent trend of stocks is not lacking, and as far as it goes it shows that accumulations have been increasing. The general feeling of hopefulness in the fall of 1908 and the buying movement preceding and following the election put some furnaces into commission that were not needed. In many cases shipping orders for foundry iron have been coming in since the beginning of this year at less than two-thirds the rate stipulated in the contracts of last fall. In the case of merchant furnaces making basic or Bessemer iron it may be expected that shipments will fall off if, as has seemed likely, lower prices on finished material result in the enlargement of the business of the leading companies at the expense of the smaller ones.

The decision to put out a furnace is not so light a matter with a merchant interest as with a large steel company with a diversity of plants. The conversion of ore into pig iron is often thought expedient, even though the pig iron must be piled. And when curtailment seems desirable, there is always a contingent which defers taking the step in the hope that the action of others may make it unnecessary. A variety of reasons may be influential as against the obvious suggestion of the relation of supply and demand. If all the merchant furnaces of the country were under a single management, it can hardly be doubted that a sharply restrictive movement would now be under way.

The food reserves in the hands of farmers are unexpectedly large. Grain prices have been rising rapidly for some time on the assumption by speculators that the Government report for March 1 would show a much

lower quantity of cereals in first hands than for several years. But the crop reporting board of the Department of Agriculture makes the farmers' stock of wheat 21.6 per cent. of last year's crop, which is only a trifle below the average stock of March 1 of the last 10 years, while corn is slightly above the average. This may be bad for the speculators, but it is satisfactory to general business interests.

Civic Industrial Expansion.

A wave of civic enterprise, the effort of communities to increase their industrial importance, is sweeping over the country, notably in the older manufacturing States. Boards of trade, chambers of commerce, committees and commissions, city and town governments are actively engaged in exploiting their communities for the purpose of attracting manufacturers to locate there. Various forms of advertising, industrial expositions, building funds, funds for loan to companies to afford them needed capital and other devices are employed in the effort to bring about practical results. In the West and South organized movements of this sort are not new, and probably this earlier enterprise is responsible to some extent for the present campaign which is spreading from one place to another in the Eastern States, as cities and towns actively strive to increase their industries and population.

A great deal of this new energy seems to be poorly directed. There is an apparent misconception of relative values. The one great attraction to those having the work in charge in some cities and towns is the new industry. The speculative element exists to a certain degree; the possibility that the infant corporation will prove the nucleus of another General Electric or Westinghouse company, rushing on in its success from a small beginning to gigantic proportions that bring with them proportionately enormous civic growth. In New England, for instance, a dozen places boast rather sadly that they might have had the Lynn Works of the General Electric had they been wise a generation ago. Generally speaking, the projects which come up for consideration in the movement may be divided into three classes: The new industry, the established industry located in another place, and the existing home industry which is hampered for lack of capital or suitable buildings or inadequate transportation facilities. As a business proposition either of the two latter classes would generally be better worth taking up than the first. It should not be lost sight of that most of the successful manufacturing companies of the country have sprung from small beginnings, while to-day the promoter would induce capital to try the shorter cut to success of beginning manufacturing on a large scale. Naturally this method borders closely on speculation. The other alternative in the effort to build up communities is to foster those concerns which have passed through the earlier stages of development and need the impetus of new capital to proceed on their way to larger things. Money so invested is usually an investment instead of a speculation. If the plant is located in another city or town, the presentation of a suitable site on a railroad or at tidewater or on a navigable stream may be the inducement necessary to secure the prize, if that is the point of view of the authorities having the matter in hand. Or the necessary new capital may be raised, contributed, of course, in the form of the purchase of stock in the corporation. The logical procedure is to capitalize everything given as an incentive to move a works, including the land, but it is not difficult to see where the actual gift of a certain amount of

cash or its equivalent may constitute a legitimate business transaction, in that the donor receives back the full value of his gift in the form of increased real estate values, perhaps, or increased business of his own. The same statements apply to home industries, which sometimes have to go begging while less worthy projects are given every assistance possible. The desire for something new is an important influence, also, as between established companies already located in the community, on the one hand, and those in some other city or town, on the other. Everything being equal, the latter appears to be given the greater consideration. It has even happened that two towns have each secured an industry from the other, because neither would give to its own the assistance offered by the other, which, of course, constitutes an absurdity.

The matter of exemption from taxes has been often discussed, but it cannot be omitted in a consideration of the question because it is becoming a more important element. It is coupled, too, with the factor of the degree of taxation of industries, in regard to which there is a wide variation of practice, from extreme stiffness to generous leniency. Except in small places, where the addition of one industry may mean a large percentage of increase in population and income, injustice may result in exempting the individual industry from taxation, the only reason being that it is new, to the exclusion from similar benefits of established concerns, and, in fact, to an addition to their tax bills as each pays his pro rata share of the assessment that is exempted.

The fair and practical solution is to minimize the tax bill as a part of the overhead expense of manufacturing, in order that costs may be kept as low as possible. Assessors should be as lenient as feasible without departing from fundamental business principles. Manufacturing is a wealth producer, similar in a way to the farms, the lands of which are assessed at a special low figure all out of proportion to that for industrial property located in the same immediate neighborhood. In some cities tax rates have actually driven away business interests, the loss of which was really important. The theory of the minimum rates for manufacturing property is that the greater their prosperity, based upon the extent and profit of their markets, the greater the value of other properties in the same community, and consequently the ability of other taxpayers to pay a little more themselves. The same argument applies to water rates where the city or town controls them, and to gas and electricity where they also are under municipal ownership.

The movement toward industrial expansion can work to profitable advantage along other lines than the direct assistance of individual manufacturers. Improving transportation facilities is a very important work; the united effort of business interests is potential in inducing railroads and navigation companies to better their systems and keep down their rates as they affect manufacturing. The street railroads may be made important auxiliaries in industrial growth, in their freight and express service and in the carrying of workmen to and from their employment, especially in suburban neighborhoods. The development of outlying properties may accomplish a great deal for a city, especially one of congested manufacturing districts lacking room for expansion and the advantages of good light and air, which practical experience has shown to be elements not to be neglected in improving the efficiency of manufacturing organization. The work may include the improvement of water front property, much of which in some centers is now lying practically idle. There are sections of country where the de-

velopment of water privileges to give manufacturers electric power at low cost, and at the same time pay a fair interest on the money invested, would be an enterprise conducive to industrial expansion. These forms of assistance constitute really the best kind of work, for they bring about conditions that attract manufacturers who need no other inducement than the best of facilities at reasonable cost.

Labor Notes.

Conciliation Agreement with the Amalgamated Association Annulled.

Some of the publications of the past week concerning the abrogation of an agreement between the Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers have been misleading. Since 1901 the two associations have had an agreement apart from that contained in the scale. It provided that in case the Conference Committee representing the manufacturers and the Amalgamated Association could not agree upon a wage scale, the questions at issue should be referred to a subcommittee of three from each side. Whenever this committee could not agree the issues were left to a disinterested person and the decision of the seventh member was final so far as the committee was concerned. An important provision was that pending such decision the mills should continue in operation. This conciliation agreement has now been annulled, but this action has no bearing whatever on the scale. The present scale expires June 30 and an effort will be made to agree upon a new scale before that time. In case of failure to agree the mills will be closed down pending an adjustment.

At Pottstown, Pa., announcement was made last week of a reduction in wages at the mills of the Glasgow Iron Company. It is stated that as against \$4.50, which has prevailed in the past year, the puddling basis will be \$3 a ton.

On behalf of certain iron rolling mill interests in the Mahoning Valley, the statement has been published in the past week that the present Amalgamation Association scale does not expire until July 1, and that if the product of local mills cannot be sold in competition with Eastern works, at which considerable wage reductions have been made recently, some plants may be closed down.

At Milwaukee, Thomas J. Neacy of the Filer & Stowell Mfg. Company recently sought to enjoin the City Council from requiring the union label on printed matter furnished the city under contract. The demurrer of the city to the complainant's petition has been overruled by the court.

Following a meeting of furnace companies belonging to the Eastern Pig Iron Association, held in New York last week, announcement was made that a 10 per cent. reduction in the wages of blast furnace workers will go into effect at a number of eastern Pennsylvania and New Jersey furnaces, March 15. It is understood that reductions in wages at a number of Central Western blast furnaces are under consideration.

At Reading, Pa., the Reading Iron Company issued a statement referring to the decline that has taken place in the price of wrought pipe, necessitating a reduction in wages in the different departments of the company's mills, ranging from 7½ to 15 per cent. For puddling \$3.75 a ton will be paid, as against \$4.50 before the reduction.

The Seattle office of the United Metal Trades Association reports that since the iron molders' union called off the strike, early in February, many members of that union have been seeking work. The association insists that the open shop must be maintained and that these men surrender their cards as members of the union, which most of them refuse to do.

The second session of the Sixtieth Congress adjourned last week without having enacted or seriously considered

any so-called labor legislation. One important report was submitted by the Judiciary Committee of the Senate—that which pointed out the unconstitutionality of amendments to the Sherman anti-trust law of 1890, proposed with a view to exempting labor organizations and certain railroad agreements from the provisions of the act. Attempts to bring up for discussion one of the bills providing for jury trials in cases of contempt of court were unsuccessful. The Judiciary Committee of the Senate decided against any hearings on the proposed anti-injunction bill. No report was made in the House by the subcommittee of the Committee on Labor, to which the question of the constitutionality of the proposed 8-hr. legislation was referred at the preceding session.

The officers of the Iron Molders' Union are collecting data concerning apprentices preliminary to a referendum vote on the proposal to admit apprentices to partial membership in the union. The information sought calls for the number of nonunion and union foundries in each locality, the number of apprentices employed, the number of molding machines in use and whether these are operated by journeymen molders or handy men and apprentices.

A Phoenixville, Pa., dispatch says that a reduction of 10 per cent. in the wages of employees at the steel works, rolling mills and fabricating plant of the Phoenix Iron Works went into effect March 8.

Customs Decisions.

Wire Coated with Nickel.

The United States Circuit Court at New York has rendered a decision in the controversy between the Government and Hermann Boker & Co. regarding the classification of wire coated with nickel. This product is made by inserting an iron or steel wire in a tube of nickel and then drawing the whole down until the nickel covering becomes welded to and a part of the iron or steel core. The wire was for many years assessed under the last provision of paragraph 137 of the tariff act, providing for a duty of 2-10 cents per pound, in addition to the rate imposed on the wire from which it is made. In 1904, however, the collector changed the classification to another provision of paragraph 137, providing for duty at the rate of 45 per cent. on iron, steel or other wire not specially provided for. Boker & Co. decided on a test case. The issue was heard by the Board of United States General Appraisers and decided in favor of the Treasury Department. The court says:

The general appraisers held in substance that the term "coating" as used in the act was a process of covering metals by galvanizing, dipping or some similar method. But I do not see why the definition should be so restricted, or why, when the final result is accomplished, this is not an iron wire coated with nickel, and therefore the kind of wire specially provided for in the act.

Holding that the cases cited in the board decision are not applicable, the court finds in favor of the importers.

Sleeper Steel and Steel Ties.

It has been decided by the Board of United States General Appraisers that sleeper steel and steel ties are not to be classified under the tariff act as "manufactures of steel not specially provided for," with duty at the rate of 45 per cent. Instead, the board holds that these pieces of steel are dutiable properly at a rate proportioned to the value under paragraph 135, as "steel in all forms and shapes not specially provided for." It is shown by the testimony that the sleeper steel is intended to be cut into short lengths and used as ties on narrow gauge railroads, while the sleepers are to be bolted on and used as a support for rails used in construction or other work. In sustaining the claim of Joseph Blank, the importer, General Appraiser Fischer states in his decision for the board that the articles are substantially in the condition as they come from the rolls and have not been advanced by any subsequent process of manufacture excepting the punching of holes.

A vein of lead and zinc ore has been discovered on the grounds of the School of Mines at Platteville, Wis., and will be opened up this spring by the students.

The Lackawanna Steel Company's Report.

The report of the Lackawanna Steel Company, Buffalo, N. Y., for the year ending December 31, 1908, as presented to the stockholders at the annual meeting held Wednesday, March 10, shows a deficit for the year of \$1,326,273, as against a surplus of \$2,443,846 for the preceding year. The heavy falling off in business last year and the expensiveness of partial and intermittent operation of plant are the outstanding features of the report. In the first half of 1908 the plants of the company were operated to but 27 per cent. of capacity; in the second half the percentage was 52. The statement of the chartered accountants accompanying the report says that full provision has been made for depreciation and extinguishment in accordance with the definite plan adopted by the directors previous to 1908 and approved by the accountants. From President E. A. S. Clarke's comments on trade conditions and the company's operations the following is taken:

The general industrial depression existing at the close of the year 1907 continued in the iron and steel trades during the year 1908, although from the middle of the year until December there was noticeable improvement. Under such conditions it has been usual in the past to endeavor to stimulate business by reductions in prices, but as your management did not deem it wise to make immediate reductions, no changes were made in prices until late in the first half of the year. The reductions then made were moderate and continued through the balance of the year. There was a decided reduction in the volume of business at the close of 1908 and the beginning of 1909, and on February 19, 1909, radical reductions were made in the prices of your company's products in order to properly care for the interests of its regular customers. It is hoped that these lower prices will stimulate business. The directors are pleased to report that during a year of great depression the properties have been maintained in the highest physical condition without increasing the outstanding obligations of the company.

The company received during 1908 from mines which it owns, or in which it is interested, 1,097,321 gross tons of iron ore, and produced 489,391 gross tons of coke and 468,010 gross tons of pig iron. It also produced 348,187 gross tons of Bessemer ingots and 215,605 gross tons of open hearth ingots, making a total of 563,792 tons of steel ingots. Shipments of product were as follows, all in gross tons, the figures for the year 1907 being given for comparison:

	1908.	1907.
Standard rails.....	190,763	523,200
Light rails.....	20,253	48,777
Angle bars, stittings, &c.....	16,719	33,510
Structural shapes.....	72,816	141,455
Plates.....	33,832	113,969
Merchant steel products.....	17,921	61,343
Sheet bars, sills, billets and blooms.....	104,108	61,157
Pig iron and miscellaneous.....	20,438	8,289
 Totals.....	 476,850	 991,700

The fact that the shipments for the year were 48 per cent. only of those of the previous year, and less than 40 per cent. of the company's annual capacity, explains the difference in earnings shown on the balance sheet.

The \$5,000,000 two-year 5 per cent. secured gold notes matured March 1, 1909, and were paid. A new issue of one-year secured gold notes in the same amount has been sold on favorable terms.

Investigation has shown an increase in the value of ore bodies and other properties owned by the company far greater than the asset, hitherto carried on its balance sheet, or "discount, commission on bonds, expenses during organization period and improvements to leased properties." The directors have therefore decided to increase the valuation of properties by an amount equal to the above item of "discount, commission on bonds, &c.," as it appeared in the balance sheet at December 31, 1907, and to apply the credit so arising in extinguishing that asset. This action is approved by the auditors.

The profit and loss account for the year ending De-

cember 31, 1908, is as follows: As a matter of comparison, the gross sales in the preceding year were \$33,011,410; the total net income from manufacturing, \$6,623,397; net earnings, \$6,431,453; interest, rentals and royalties, \$2,255,626; depreciation and renewals, \$1,282,189; sinking fund and exhaustion of minerals \$449,791.

Gross sales and earnings.....	\$15,087,879.49
Less manufacturing costs and operating expenses.....	12,741,601.17

Net income from manufacturing and operating.....	\$2,346,278.32
Dividends on investments in companies not controlled.....	229,374.24

Total income.....	\$2,575,652.56
Deduct administrative and general expenses, including taxes and commercial discount.....	682,515.40

Net earnings for year 1908.....	\$1,893,137.16
Less interest on bonds and gold notes, also rentals and royalties.....	2,080,258.21

Balance.....	\$187,121.05
Less appropriations for sinking funds and exhaustion of minerals.....	\$394,965.06

For depreciation and accruing renewals.....	744,186.96
	1,139,152.02

Deficit for the year.....	\$1,326,273.07
Surplus at January 1, 1908.....	4,562,763.59

Leaving surplus December 31, 1908..... \$3,236,490.52

The consolidated balance sheet, including subsidiary companies, as of December 31, is as follows:

	Assets.	1908.	1907.
Properties at beginning of year.....	\$60,615,067	\$49,278,880	
Expended for additions.....	564,315	11,336,186	
Reserves heretofore deducted from property now included in funds.....	355,900	.....
Amount added as in president's report (\$2,350,621), less part representing iron mines.....	1,223,827	.....
Investments in ore companies.....	6,173,952	5,032,321	
In hands of sinking fund trustees.....	128,161	130,435	
Discount, commercial organization expenses, &c. ....	.....	2,350,621	
Inventories.....	10,973,648	10,322,289	
Accounts receivable.....	506,998	922,443	
Customers' accounts (less reserve).....	3,686,398	4,373,811	
Notes receivable.....	377,985	593,892	
Cash.....	794,883	1,337,347	
Deferred charges to operations.....	33,334	44,952	
 Totals.....	 \$85,434,468	 \$85,723,177	

	Liabilities.	Capital stock (outstanding).....	\$34,728,000	\$34,721,400
Stock of Lackawanna Iron & Steel Company not held.....	22,000	28,000		
Funded debt.....	*39,559,000	†39,904,000		
Accounts payable and pay rolls.....	2,844,637	2,970,314		
Bills payable.....	187,981	144,469		
Taxes accrued.....	121,846	64,117		
Interest accrued.....	488,704	480,543		
Sinking and reserve funds.....	4,245,809	2,837,971		
Profit and loss surplus.....	3,236,491	4,562,763		
 Totals.....	 \$85,434,468	 \$85,723,177		

* Includes \$16,490,000 notes. † Includes \$16,500,000 notes.

The capacity of the Lackawanna Steel Company's plant at South Buffalo is put at 50,000 gross tons a month in rails and 50,000 tons a month in the products of the plate, structural and merchant mills.

Fifteen heavy consolidation locomotives are under construction at the Juniata shops of the Pennsylvania Railroad Company. They are designed for extra heavy service, and will weigh 108 tons each. The boilers to be used are of the standard Belpaire type, with a length of 180 in. and a minimum inside diameter of 76½ in. The total grate area is 55.13 sq. ft., and the total heating surface 3839 sq. ft. The working pressure will be 205 lb. per square inch. The eight coupled driving wheels are to be 62 in. in diameter and the truck wheels 33 in. The tenders will have a carrying capacity of 13½ tons of coal and 7000 gal. of water.

Moorhead, Brother & Co., Inc., Pittsburgh, who recently increased the capacity of their plate mill so that it now rolls plates 100-in. wide, have added rolls for the manufacture of diamond, ribbed and checkered steel floor plates, such as are used for engine room floors, stairways, &c.

January Iron and Steel Exports and Imports.

The foreign trade report for January, issued by the Bureau of Statistics of the Department of Commerce and Labor, shows that the movement both out and in continues to be affected by the worldwide depression. The value of the January exports of all kinds of iron and steel and manufactures thereof, not including ore, was \$10,329,388, against \$12,231,741 in the preceding month. The commodities for which quantities are given also show a falling off, the figures for January being 70,085 gross tons, against 77,654 tons in December. The details of the exports of these commodities for January and for the seven months ending with January are as follows:

Exports of Iron and Steel.

	January.		Seven months.	
	1909.	1908.	1909.	1908.
Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	3,213	2,546	29,464	34,619
Scrap	1,812	1,516	11,590	10,478
Bar iron.....	924	407	5,540	9,863
Wire rods.....	1,076	595	4,990	3,630
Steel bars.....	3,557	5,101	24,306	45,097
Billets, blooms, &c....	9,506	5,317	57,998	34,525
Hoop, band, &c.....	319	934	2,179	7,015
Steel rails.....	13,137	16,285	126,671	212,176
Iron sheets and plates.	4,107	3,307	28,812	25,936
Steel sheets and plates.	4,421	4,581	57,716	37,487
Tin and terne plates.	191	964	955	4,860
Structural iron and steel	6,453	11,017	62,490	84,472
Barb wire*.....	4,813	12,022	{ 39,531 }	97,342
Wire	4,310		{ 34,119 }	
Cut nails.....	487	449	4,084	3,558
Wire nails.....	2,610	2,678	14,291	23,391
All other nails, includ- ing tacks.....	532	559	3,606	4,030
Pipes and fittings....	9,167	6,075	66,102	117,231
Totals.....	70,085	74,353	574,444	755,710

* Not separately stated prior to July 1, 1908.

The total value of the imports of all kinds of iron and steel and manufactures thereof, not including ore, was \$1,830,071 in January, against \$1,709,475 in the preceding month. The imports of commodities for which quantities are given were a mere trifle larger, the figures for January being 19,762 gross tons, against 19,139 tons in the previous month. The details of the imports of these commodities for January and for the seven months ending with January are as follows:

Imports of Iron and Steel.

	January.		Seven months.	
	1909.	1908.	1909.	1908.
Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	11,048	15,387	56,802	173,031
Scrap	169	678	3,101	16,134
Bar iron	2,318	4,066	10,041	24,623
Rails	222	149	1,184	2,181
Hoop, band, &c.....	44	41	866	226
Billets, bars and steel in forms n.e.s.....	1,413	759	7,668	12,301
Sheets and plates....	104	165	1,633	1,688
Tin and terne plates.	3,266	5,005	25,828	31,907
Wire rods.....	1,022	1,165	6,693	9,197
Structural iron and steel	176	593	2,961	1,285
Totals.....	19,762	28,008	116,727	272,573

The imports of iron ore in January were 105,233 gross tons, against 124,339 tons in the preceding month. The total imports of iron ore for the seven months ending with January were 548,333 gross tons, against 682,239 tons in the corresponding period of the previous fiscal year.

The total value of the exports of iron and steel and manufactures thereof, not including ore, in the seven months ending with January was \$80,328,052, against \$116,335,790 in the corresponding period of the previous fiscal year. The imports were respectively \$19,957,261 and \$38,789,851.

Manufacturers in the metal working industries at Milwaukee and vicinity are talking of establishing a joint bureau for chemical research and other experimental work. There are now being maintained a number of expensive private plants, and large expenditures are made yearly for tests at outside points, often with unsatisfactory results.

PERSONAL.

Frank W. Highberger of Greensburg, Pa., formerly connected with the Carnegie Steel Company, has been appointed sales agent of the Mt. Pleasant Coke Company, and will be located at Pittsburgh.

J. V. Lytle, for three years connected with the second-hand department of the Brown & Zortman Machinery Company, Pittsburgh, has resigned to accept a position with the F. P. Schlelein Machinery Company, dealer in new and second-hand metal and woodworking machinery, 402 Real Estate Savings & Trust Building, N. S., Pittsburgh.

F. M. Emerson, for several years identified with the American Bridge Company's contracting department, has resigned to found the construction firm of F. M. Emerson & Co., with offices in Milwaukee, Wis.

The A. O. Smith Company recently engaged, as assistant to the general superintendent of its works at Milwaukee, R. R. Keith, who was for a number of years identified with the Sight Feed Oil Pump Company.

H. L. Walton has been secured as salesman and engineering expert by the Kienzel & Merrick Mfg. Company, constructor in iron and bronze, whose works are in Minneapolis, Minn.

Wm. Pertell, until recently president and general manager of the Worcester Steel Foundry Company, has entered the sales department of the Allis-Chalmers Company, with headquarters in Boston.

H. P. Eels of the Bucyrus Company, South Milwaukee, Wis., who is vice-president of the National Metal Trades Association, will on March 11 deliver an address before the Cincinnati branch.

President Charles M. Schwab of the Bethlehem Steel Company arrived in New York from Europe March 5. He denied that his return was hastened by the recent declaration of an open market in steel products and said that a competitive test would be made in about six weeks between American and English high speed steel.

E. E. Brosius of Alliance, Ohio, has accepted the position of sales engineer with Pawling & Harnischfeger, Milwaukee, Wis., the well-known builders of traveling cranes.

I. F. Byrne, formerly with the Canada Motor & Cycle Company, has been made purchasing agent of the Bristol Engineering Corporation, Bristol, Conn.

G. A. Edgin, formerly sales manager of the Duff Mfg. Company's New York office, at 50 Church street, has been transferred to the same department of the company's main office at Pittsburgh, and is in turn succeeded in New York by E. A. Johnson, recently appointed Eastern sales manager.

Building airships for the market is shortly to become a regular part of the business of the Napier Automobile Company of America. This is the first motor car factory in this country to follow the lead of the Clement-Bayard Company of France. A part of the Napier factory at Jamaica Plain, Mass., is now being equipped for the building of dirigibles and aeroplanes, the former especially, and they will be made to sell for from \$8000 to \$35,000.

British engineering papers announce the awarding of a contract to a Leeds firm for a large steel reservoir for Calcutta, to cost £91,867, and to hold 9,000,000 gal. of water. The American Consul at Calcutta, writing to the Department of Commerce and Labor at Washington, regrets that after all his efforts to place this contract before American engineers and manufacturers of iron and steel no American bid was submitted.

M. A. Hanna & Co., Cleveland, Ohio, have issued their iron ore pamphlet for 1909, containing cargo analyses of their ores as shipped in 1908. The list contains seven old range Bessemer, eight old range non-Bessemer and two manganeseiferous ores. Of the Mesaba range ores three are Bessemer and five non-Bessemer.

OBITUARY.

JULIAN L. YALE died at his home in Chicago March 3 from a stroke of apoplexy. He was born in Herkimer County, New York, March 26, 1849. Early in his business career he went to Chicago where he engaged in the railroad supply business. He afterward went to Cleveland, Ohio, where he served the Big Four Railroad in the capacity of purchasing agent and subsequently became sales agent for the Carnegie Steel Company in that city. When the Illinois Steel Company was formed, in 1889, he returned to Chicago as sales manager of that company, from which he resigned in 1890 to head Julian L. Yale & Co., Inc., which he organized for the sale of railroad supplies and of which he was president at the time of his death. He was a son of Linus Yale, inventor and manufacturer of the famous Yale lock, in the development of which Julian took an active part in his early youth. He was connected with a number of the leading clubs in various cities, including the Chicago Club, Chicago Athletic Club and Cliff Dwellers, all of Chicago; Union Club, Cleveland; Union League Club, New York; St. Louis Club, St. Louis, and Minnesota Club, St. Paul. He leaves no family.

WILLIAM McCULLY MCKELVY died at his home in Pittsburgh, Pa., February 28, aged 70 years. He was born in Pittsburgh. He was president of the Alpha Portland Cement Company, a director of the Lockhart Iron & Steel Company, and of the Pittsburgh Foundry Company, and until a few years ago president of the Third National Bank of the North Side, formerly Allegheny.

JAMES ROBERTSON, Coatesville, Pa., died March 4, aged 48 years. He was superintendent of the open hearth steel department of the Lukens Iron & Steel Company. He was a native of Glasgow, Scotland, came to this country about 24 years ago, and since then has been prominent in open hearth steel practice, being connected with the above named company since 1901. He leaves a widow and six children.

HENRY BAUSCH, vice-president of the Bausch & Lomb Optical Company, Rochester, N. Y., died March 2, at Augusta, Ga., aged 50 years.

The Effect of Titanium Alloy on Steel.

A recently published pamphlet of the Titanium Alloy Mfg. Company, Charles B. Slocum, special agent, Pittsburgh, gives interesting details of experiments made at various steel works with this alloy. The first heat of Bessemer steel treated with titanium alloy was made by the Maryland Steel Company at Sparrows Point, Md., in November, 1907, under the direction of Simon S. Martin, superintendent. Later, rails from steel treated with titanium alloy were furnished by the Maryland Steel Company to the Baltimore & Ohio Railroad. These have been in service for several months on Kessler's Curve, on the Cumberland Division. While full details of the results in service are not available the greater durability of the titanium rail has been marked. The lower untreated Bessemer rails have "flowed" considerably while the titanium rails show no such effect. It is stated that the upper plain Bessemer rails are cut down practically the full depth of the flange of the wheels, while the upper titanium rails are cut less than half as much. The titanium alloy as used at various steel works has caused the steel to lie quiet in the molds and to roll well. The ingots showed entire freedom from blowholes. Similar tests in connection with open hearth steel have shown the elimination of blowholes, an increase of elastic limit and greater reduction of area. The increased quantity of slag removed by the introduction of the alloy is considered noteworthy. The titanium passes into the slag except where unusual quantities of the alloy have been added. Then the excess above the quantity needed to remove impurities remains in the steel. The increased heat of the molten metal caused by the titanium reaction is put at from 30 to 50 degrees C. It is claimed in addition that oxide of iron

is entirely removed by the use of titanium, and, therefore, rusting is to a great degree prevented.

The effect of titanium alloy in iron is to remove oxides and nitrides, as in steel, increasing the fluidity and heat of the metal and also increasing the quantity of slag. A test at Pittsburgh showed that the crushing strength of chilled iron is increased nearly 100 per cent. by the use of 1 per cent. of titanium alloy. The treated metal was much harder than the untreated metal. At the car wheel foundry of the Norfolk & Western Railway Company, Roanoke, Va., in August, 1908, 1 per cent. of the alloy was used in the charges and passed through the cupola without any other handling. Twenty-six test bars were poured, equally divided between plain metal and treated metal. The iron treated with titanium alloy gave 24.4 per cent. more deflection under stress than the plain metal, indicating the tendency of the alloy to reduce brittleness. The products of the Titanium Alloy Mfg. Company and the processes employed in manufacture are covered by various patents granted to Auguste J. Rossi.

Jobbers in Wrought Iron Pipe, Valves and Fittings Form a New Association.

On invitation of a committee representing New York, Baltimore, Philadelphia, Boston and Pittsburgh jobbing houses in wrought iron pipe, valves and fittings, over 60 jobbers in these lines met at the Fort Pitt Hotel, Pittsburgh, on Tuesday and Wednesday, March 9 and 10, for the purpose of forming a new and permanent association. This will be known as the National Association of Jobbers of Wrought Pipe and Fittings and will have no connection with any other organization whatever. Its purpose is to meet for their mutual benefit and to bring to a satisfactory issue such matters as benefit the jobbers as a whole, which is impossible under existing conditions.

The committee held a short session Monday afternoon, when the preliminaries were discussed. The main meetings were held mornings and afternoons of the two following days, but were open only to jobbers, manufacturers and their agents who were at the hotel being excluded. Of the jobbers in attendance some had been previously instructed and empowered by absent ones to vote by proxy on the membership question. The new association therefore starts with an initial membership of about 100 and represents the jolting trade all over the country. It is expected that it will do much good in its field and that new members will be added.

A. E. Ford, Ford & Kendig, Philadelphia, Pa., was elected president on Tuesday. The same evening Edward Worcester, National Tube Company, Pittsburgh, tendered some of the jobbers a dinner, which was served at the Union Club. The Executive Committee met Wednesday morning to select officers of the association.

Stocks of Copper and February Production.

The Copper Producers' Association, through L. C. Graton, issued on Wednesday afternoon the following report on the production and stocks of marketable copper in this country:

	Pounds.
Stock of all kinds on hand at all points in the United States, February 1.....	144,130,045
Production in the United States from all domestic and foreign sources during February.....	103,700,817
Delivery for consumption and export during February.....	74,546,614
Stock of all kinds on hand at all points in the United States, March 1.....	173,284,248

The Cutler-Hammer Mfg. Company of Milwaukee, Wis., maker of electric controlling devices, announces the opening of a district office in Cleveland, Ohio, room 1108 Schofield Building. The new office will be in charge of C. J. Kruse, who comes from the engineering department of the company and is well qualified to advise regarding the proper device to use in any case involving the control of electric motors.

NEWS OF THE WORKS.

Iron and Steel.

The Portland Iron & Steel Company denies that its mills at Portland, Maine, have been closed for an indefinite period. The company expects to resume operations within the next week or two.

The receiver of the Passaic Steel Company, Paterson, N. J., will sell the plant at auction April 9.

No. 1 furnace of the Alabama Consolidated Coal & Iron Company at Gadsden, Ala., has been put in operation after having been banked March 1.

One of the Sloss-Sheffield Steel & Iron Company's furnaces at Sheffield, Ala., was banked February 22.

Extensive improvements are being made in the plant of the American Rolling Mill Company, Middletown, Ohio, calculated to enlarge the facilities of the galvanizing department. An electric crane will be installed.

General Machinery.

The Wyoming Machine & Foundry Company, Cheyenne, Wyo., is starting a small machine shop business and foundry in the old foundry plant at 2112 Bent street.

The American Steel Dredge Company has been incorporated at Ft. Wayne, Ind., with \$200,000 capital stock, to manufacture dredging machinery. The incorporators are John D. Rauch, John C. F. Sprankle, Perry G. Randall and others.

The machine shops of the Stevenson Iron Mining Company, near Hibbing, Minn., were recently destroyed by fire, the loss aggregating \$25,000. In addition to the loss of shop equipment, one 65-ton standard gauge locomotive was seriously damaged. What new machinery will be required is not yet definitely known.

J. Alan Middleton, proprietor of the Frankford Machine Works, Frankford, Philadelphia, Pa., has taken over the Frankford foundry and hereafter the business will be conducted under the name of the Frankford Foundry & Machine Works. In addition to the manufacture of heavy and light shears, forge and punch presses, shovel machinery, edge tool machinery and all kinds of special machinery, the firm is now in a position to do a general jobbing foundry business. Louis T. Turner is manager.

The Brummett Coal Company, Tulsa, Okla., is in the market for mining machinery, including a 100 hp. engine, air compressor to drive four or five drills, &c.

The W. P. Taylor Company, Buffalo, N. Y., is building a two-story brick machine shop addition to its foundry and iron works at Howard, Louis and Holt streets. Not much additional machinery will be required, as machinery will be moved from the present machine shop to afford space required for chipping and finishing room.

The Puget Sound Iron & Steel Works, Tacoma, Wash., has sold the property on which its plant is located to the Northern Pacific Railroad, for which it received \$20,000 and 11 acres of ground at tidewater, between Eleventh street and the Wheeling-Osgood waterway. The cash received is to be used for moving the plant to the new location. Within six months the company expects to erect a new plant on the site, where in addition to its machine shops it will build a dry dock, and in addition to the manufacture of hoisting and logging engines it will be equipped for marine repairs and the building of new vessels. The Northern Pacific Railroad will use the present site of the Puget Sound Iron & Steel Works as part of its new Tacoma terminal yards.

The J. D. Maltby Company, Corning, N. Y., will soon start construction on an ice manufacturing plant at West Tioga avenue. The building is to be of brick and steel, 40 x 70 ft., and will have a daily capacity of 30 tons. The equipment will consist of one 25-ton ice machine, one 80-hp. gas engine, 400 sheet metal ice cans, capacity 300 lb. of ice each; ice conveying machinery, &c.

Power Plant Equipment.

The town of Inglewood, Colo., a suburb of Denver, has let a contract to the Consolidated Engineering Company, Denver, for the installation of a water works system. American spiral riveted pipe 10 in. in diameter and No. 12 gauge will be used for the mains, which will be buried at least 4 ft. below the grade line. The distribution system will also be composed of spiral pipe and controlled by a 4-in. valve at every corner. A 100,000-gal. tank 80 ft. high will supply the water storage capacity. The pumping plant will include two units, one a triplex geared three-phase 440-volt 60-cycle motor, the second, a horizontal centrifugal pump direct connected to a motor similar to that of the triplex pump. These pumps, which will have a capacity of 250 gal. per minute operating against a maximum head of 350 ft., will be automatically controlled by Sundh Electric Company's regulators.

Muralt & Co., New York, have been awarded the contract for remodeling and enlarging the water power plant on the Peconic River at Tower Mills, L. I. New turbines of the vertical shaft type will replace the old water wheels now in use, and an additional unit of the same general design will be installed.

The Conron Brothers Company, New York, is having plans prepared for a three-story cold storage building to be erected at

Brook avenue and 153d street. The building will have a frontage of 206 ft., and will have direct connection with the New York Central Railroad tracks.

Wm. Thorn of Warsaw, Ind., and others have asked for a franchise to supply the city with arc and incandescent lighting. The company proposes to erect a plant on the Tippecanoe River, at Monoquet, a few miles from Warsaw, where for years several mills were operated by water power. Engineers report that 300 hp. can be developed and 700 hp. if the river is dredged.

Recent orders secured by the Crocker-Wheeler Company, Amherst, N. J., include: Emerson Mfg. Company, Rockford, Ill., an 800-kw. and a 75-kw. generator; Oakville Company, Oakville, Conn., 300-kw. generator; High Standard Steel Company, Rockaway, N. J., two 125 k. v. a. alternators of the coupled type; De Laval Steam Turbine Company, Trenton, N. J., two 50-kw. turbo generators; Franklin Square House, Boston, Mass., 75-kw. engine type generator; Enterprise Building Company, Fall River, Mass., 50-kw. engine type generator; Clark & Cox, Denver, Colo., eight motors; Ogden Iron & Steel Company, New York, three 10-hp. motors; Stiles & Hart Brick Company, Wier Branch, Mass., 40-hp. induction motor. The company reports an increase in the demand for small direct current motors.

T. E. McGarr, secretary of the State Commission in Lunacy, Capitol Building, Albany, N. Y., will receive sealed bids until March 24 for the construction of a power house, 160 x 200 ft., of brick, steel and concrete, also of a laundry building, two stories, 100 x 200 ft., of brick and steel construction, to be erected at the Kings Park State Hospital, Kings Park, N. Y. Bids will also be received until March 24 for the following equipment to be installed in the central power and heating plant building at Central Islip, N. Y., for the Central Islip State Hospital; two 16 x 60 ft. horizontal tubular boilers, one 190-hp. automatic cut-off engine, one 100-kw. three-phase alternating current generator and switchboard. Plans and specifications can be obtained by addressing State Architect Franklin B. Ware, Capitol Building, Albany.

Foundries.

George L. Fischer, Fred F. Fischer, Albert Fischer and George L. Fischer, Jr., of Pittsburgh have applied for a Delaware charter, the capital stock being \$8000 and the name the Fischer Foundry Company of Pittsburgh. The company owns property on Sixteenth and Muriel streets, S. S., Pittsburgh, on which building about 36 x 60 ft. stands. This is being remodeled for a machine shop and office. Its equipment will include a gas engine and miscellaneous tools, while in the rear a new steel structure, 26 x 60 ft., is being erected. This will contain a 10-ton cupola, already purchased and erected, core oven and charging floor, 10-ton crane, &c. It is the intention to manufacture gray iron castings and conduct a general machine shop, making small tools later on.

The Chicago Hardware Foundry Company, North Chicago, Ill., has under construction a new foundry building, which when completed will add materially to the output of the plant. The new foundry will be equipped with four cupolas and other modern appliances for the economical handling of the castings.

The Dimmick Pipe Company, Birmingham, Ala., is making about 200 tons of water and gas pipe daily and has orders booked that will keep the works fully engaged for four months.

Bridges and Buildings.

The Worden-Allen Company, Milwaukee, Wis., is bringing to successful completion its large contract for steel bridges on the Pacific Coast extension of the Chicago, Milwaukee & St. Paul Railroad, which were built and erected in remarkably quick time, which is partly due to the fact that the company keeps an unusually large number of skilled men on field work continuously.

The Wisconsin Bridge & Iron Company, Milwaukee, Wis., has prepared plans for a 128-ft. steel bridge across the right of way of the Green Bay & Mississippi Canal Company at South Kaukauna, Wis.

The Board of Freeholders of Passaic County, whose office is at Paterson, N. J., will receive bids until March 17 for the construction of a steel bridge across the Wanakena River at Wanakena, N. J.

Fires.

The plant of the Burrill-Johnson Iron Company, Yarmouth, N. S., was damaged \$30,000 by fire March 4.

The tipple and shaft building of the Smith Mills Coal & Mining Company at Smith Mills, near Henderson, Ky., were damaged \$10,000 by fire March 4.

The Central Foundry Company's plant at Anniston, Ala., was partly destroyed by fire March 8, the loss being about \$40,000.

The brass foundry of the Leland & Faulconer Mfg. Company, Detroit, Mich., was burned March 1. The loss is placed at \$3000.

Hardware.

The Wooster Brush Works, Wooster, Ohio, has let the contract for a new factory. The main building will be 70 ft. wide, 200 ft. long, of brick and cement, three stories, slow burning construction, with heating and power plant at the rear, 25 x 70 ft., one story. The contract calls for the completion of the factory by the first of June. The present facilities of the works do not permit them to keep abreast of their orders.

The Iron and Metal Trades

Announcements of wage reductions in the iron industry are becoming more numerous and others are about to be made. It is evident that this phase of the readjustment has only been fairly entered upon, and it may be expected that the process will be thorough, affecting every operation from the mining of the ore to the rolling of the finished product. The trade is facing the probability that the return of real prosperity may yet lead it over some rough ways. And in such a general readjustment as is now being discussed it is hard to see how the railroads and other important interests can escape.

In the past week announcement has been made of a 10 per cent. reduction in wages at a number of eastern Pennsylvania and New Jersey blast furnaces. This was not a decision of the Eastern Pig Iron Association, it should be said, as that organization does not deal with wage questions. No action has yet been taken on wages by the iron mining companies in Eastern districts.

There is unmistakably more activity in the iron and steel markets now that the trade has been able to get its bearings in a measure. It may be said that more business has been done in some lines than might be judged from surface indications, yet there is such irregularity in prices as makes the situation in particular products far from clear. The attitude of the large steel companies toward semifinished steel is a matter of conjecture. Some of them have a trade in billets and sheet bars with consumers whose product competes with certain finished products of other large producers. The tendency of prices in these lines is to narrow the "spread" of the independent producer. On sheets, for example, some prices recently made would bear hard on the mill that buys its steel in the market, if the new basis for sheet bars, which was announced from Pittsburgh as "established" last week, were maintained.

A number of steel manufacturers are quoting \$23. at Pittsburgh, for billets and \$25. Pittsburgh, for sheet bars on small lot business. Larger contracts are known to have brought out lower prices than the above for billets.

Railroad buying is still very limited. The Long Island Railroad has closed with the Maryland Steel Company for 4000 tons of rails, and the Delaware & Hudson will place 4000 tons of open hearth rails with the Bethlehem mill. Another road has inquired for 30,000 tons.

Structural lines show increased activity, but fabricators would like better assurances as to new work that must take the place of the long-pending business just booked. March opened with about 80,000 tons of "live" projects, 60,000 tons having been marked off in February as indefinitely postponed, while 50,000 tons was closed in that month. The contracts of the week include 11,000 tons for the Tooele smelter of the Anaconda Company, 4600 tons for the Vendome Hotel, Chicago, and 6000 tons for the Pennsylvania Railroad elevated work at Philadelphia. More than 30,000 tons of railroad bridge work is pending, including 8000 tons for the New York Central terminal in New York. Prices show even sharper competition, and the 1.30c. basis on plain material has been cut.

The pig iron market is not being seriously tested, but is shown to be weak by transactions for early delivery. Accumulations of stock are heaviest in the Central West, the new conditions in finished material militating against merchant makers of steel making iron. Shipments to foundries are being held up in many cases. Cincinnati reports the sale of 24,000 tons of Southern iron to the leading pipe interest.

After the buying spurt the copper market has settled into dullness. The stocks of marketable copper in the country are shown to have increased 29,000,000 lb. in February, or to 173,284,000 lb. March 1.

A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type,
Declines in Italics.**

At date, one week, one month and one year previous.

PIG IRON, Per Gross Ton: Mar. 10, Mar. 3, Feb. 10, Mar. 11,
1909. 1909. 1909. 1908.

Foundry, No. 2 standard, Philadelphia	\$16.50	\$16.50	\$17.00	\$18.25
Foundry No. 2, Southern, Cincinnati	15.75	15.75	16.25	15.75
Foundry No. 2, local, Chicago	16.50	16.50	17.00	17.85*
Basic, delivered Eastern Pa.	16.00	16.00	16.75	17.25
Basic, Valley furnace	15.00	15.00	15.25	15.25
Bessemer, Pittsburgh	16.40	16.40	16.90	17.90
Gray forge, Pittsburgh	14.90	14.90	15.15	15.90
Lake Superior charcoal, Chicago	19.50	19.50	19.50	21.50

BILLETS, &c., Per Gross Ton:

Steel billets, Pittsburgh	22.00	...	25.00	28.00
Forging billets, Pittsburgh	...	...	27.00	30.00
Open hearth billets, Phila.	24.20	...	26.20	30.40
Wire rods, Pittsburgh	33.00	33.00	33.00	35.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

Steel rails, melting, Chicago	13.00	13.00	14.50	12.25
Steel rails, melting, Philadelphia	15.50	...	15.50	13.00
Iron rails, Chicago	17.75	17.75	18.25	15.75
Iron rails, Philadelphia	17.00	...	19.00	18.00
Car wheels, Chicago	14.75	14.75	15.25	15.50
Car wheels, Philadelphia	14.00	...	15.50	16.00
Heavy steel scrap, Pittsburgh	14.25	14.50	15.50	13.00
Heavy steel scrap, Chicago	12.50	12.50	13.50	11.50
Heavy steel scrap, Philadelphia	13.50	...	15.50	13.00

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.42	1.42	1.50	1.65
Common iron bars, Chicago	1.40	1.40	1.50	1.65
Common iron bars, Pittsburgh	1.40	1.40	1.50	1.50
Steel bars, tidewater, New York	1.36	1.36	1.50	1.76
Steel bars, Pittsburgh	1.20	1.20	1.40	1.60
Tank plates, tidewater, New York	1.46	1.46	1.70	1.86
Tank plates, Pittsburgh	1.30	1.30	1.60	1.70
Beams, tidewater, New York	1.46	1.46	1.76	1.86
Beams, Pittsburgh	1.30	1.30	1.60	1.70
Angles, tidewater, New York	1.46	1.46	1.76	1.86
Angles, Pittsburgh	1.30	1.30	1.60	1.70
Skelp, grooved steel, Pittsburgh	...	...	1.45	1.70
Skelp, sheared steel, Pittsburgh	...	...	1.50	1.80

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.30	2.30	2.50	2.50
Wire nails, Pittsburgh	1.95	1.95	1.95	2.05
Cut nails, Pittsburgh	1.80	1.80	1.80	1.90
Barb wire, galv., Pittsburgh	2.40	2.40	2.40	2.50

METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	13.00	12.75	13.50	12.62½
Electrolytic copper, New York	12.62½	12.62½	13.25	12.50
Spelter, New York	4.80	4.80	5.05	4.75
Spelter, St. Louis	4.65	4.62½	4.90	4.60
Lead, New York	3.97½	3.95	4.10	3.75
Lead, St. Louis	3.82½	3.80	3.92½	3.60
Tin, New York	28.65	28.62½	28.45	29.25
Antimony, Hallett, New York	7.75	7.75	8.00	9.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	\$3.80	\$3.80	\$3.89	\$3.89

* This quotation has been changed for uniformity from price at furnace to delivered price at foundries, adding 35c. for switching charges.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rate from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steel, and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.30c., net; I-beams over 15 in., 1.40c., net; H-beams over 8 in., 1.50c.; angles, 3 to 6 in., inclusive, 1/4 in. and up, 1.30c., net; angles, over 6 in., 1.40c., net; angles, 3 x 3 in. and up, less than 1/4 in., 1.50c., base, half extras, steel bar card; tees, 3 in. and up, 1.30c., net; zees, 3 in. and up, 1.30c., net; angles, channels and tees, under 3 in., 1.20c., base, half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

Plates.—Tank plates, 3/4 in. thick, 6 1/4 in. up to 100 in. wide, 1.30c., base, at mill, Pittsburgh. Extras over this price are as follows:

Tank, ship and bridge quality, 1/4-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{3}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered $\frac{3}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{3}{4}$ -in. to and including 3-16-in. plates

on thin edges..... \$0.10

Gauges under 3-16-in. to and including No. 8..... 15

Gauges under No. 8 to and including No. 9..... 25

All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)..... 10

Complete circles..... 20

Boiler and flange steel plates..... 10

"A. B. M. A." and ordinary firebox steel plates..... 30

Still bottom steel..... 30

Marine steel..... 40

Locomotive firebox steel..... 50

Shell grade of steel is abandoned.

For widths over 100 in. up to 110 in..... 05

For widths over 110 in. up to 115 in..... 10

For widths over 115 in. up to 120 in..... 15

For widths over 120 in. up to 125 in..... 25

For widths over 125 in. up to 130 in..... 50

For widths over 130 in..... 1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c. Box annealed sheets, Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; Nos. 27, 2.25c.; Nos. 28, 2.30c.; Nos. 29, 2.35c.; Nos. 30, 2.45c. Galvanized sheets, Nos. 13 and 14, 2.35c.; Nos. 15 and 16, 2.45c.; Nos. 17 to 21, 2.55c.; Nos. 22 and 24, 2.70c.; Nos. 25 and 26, 2.90c.; Nos. 27, 3.10c.; Nos. 28, 3.30c.; Nos. 29, 3.40c.; Nos. 30, 3.65c. Painted roofing sheets, No. 28, 1.65c. per square. Galvanized roofing sheets, No. 28, 2.90c. per square for $2\frac{1}{2}$ -in. corrugations. On black and galvanized sheets, and also on roofing sheets, where customers will furnish immediate specifications for prompt shipment, leading sheet mills are naming prices about \$2 a ton less than are given above. These prices, however, are absolute minimum of the market, and are only accepted upon actual specifications for immediate shipment.

Wrought Pipe.—Discounts on steel pipe, $\frac{3}{4}$ to 6 in., to the large trade, are 80 and 5 per cent. off list, while a few of the very largest jobbers, that have mill connections, are given 81 and 5 per cent. off list. Regular discounts to jobbers, carloads, are as follows:

	Steel merchant pipe. Black. Galv.	Genuine iron pipe. Black. Galv.
$\frac{1}{4}$ to $\frac{3}{4}$ in.	72 56	67 51
$\frac{3}{4}$ in.	73 59	68 54
$\frac{1}{2}$ in.	76 64	71 59
$\frac{3}{8}$ to 6 in.	80 70	75 65
$\frac{7}{8}$ to 12 in.*	75 60	70 55
Extra strong, plain ends:		
$\frac{1}{4}$ to $\frac{3}{4}$ in.	65 53	60 48
$\frac{3}{4}$ to 4 in.	72 60	67 55
$\frac{1}{2}$ to 8 in.	68 56	63 51
Double extra strong, plain ends:		
$\frac{1}{4}$ to 8 in.	61 50	56 45

* Iron prices are for 7 to 8 in.

Boiler Tubes.—Regular discounts are as follows:

	Steel.
1 to $1\frac{1}{2}$ in.	.50
$1\frac{1}{2}$ to $2\frac{1}{2}$ in.	.62
$2\frac{1}{2}$ to 5 in.	.70
$2\frac{1}{2}$ in.	.64
6 to 18 in.	.62
$2\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.	
$2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.	

Wire Rods.—Bessemer rods, \$33; chain rods, \$33; basic rods, \$34.

Chicago.

FISHER BUILDING, March 10, 1909.—(By Telegraph.)

Buyers are beginning to wake up to the true import of the new price levels that are being established by the open market policy which are now low enough in several lines of finished material to be attractive. Evidence of this is seen in a decided increase in the volume of business placed in the last few days. In one day of the present week the leading interest entered contracts and specifications aggregating more than 20,000 tons, and it is even more significant that a very large proportion of the new orders was accompanied by specifications. The mills generally are offering no encouragement to buyers seeking to cover their requirements by contracts extending far into the future. July 1 seems to be the ultimate date for deliveries on present sales by all interests. Structural shapes are clearly leading all other rolled products in point of new business. This is doubtless due to the exceptionally favorable prices being made by fabricators, which in some instances are reported to have gone as low as \$38 per ton on fabricated work. The published record of building permits for the month of February shows a remarkable gain in new construction projects in practically all the principal cities. This foreshadows a heavy demand

for steel which will doubtless be hastened by the low prices offered. A contract for the fabrication of 4600 tons of plain material required for the Vendome Building was placed with the Hansell-Elcock Company, the Fuller Company being general contractor. This, together with other orders, swells the week's business in fabricating contracts to something over 20,000 tons. As a result of open market competition there is naturally more or less irregularity within reasonable limits on the various rolled products, yet values are gradually settling to a definite level. Even now there is perhaps less variation in the price offered than was the case under the old official schedule. Practically all of the finishing mills at the South Works of the Illinois Steel Company are in operation this week, the two plate mills having started up after a periodical shutdown of a few weeks. The Western mills of the Republic Iron & Steel Company are running at about 45 per cent. of capacity.

Pig Iron.—The pig iron market is fairly becalmed, and is drifting with the tide. The combined sales of all of the interests for the week would fall far short of an average day's business for any one selling agency; there is, indeed, nothing doing save in car lots or a little larger for spot delivery. The fact that contract shipments are going forward with less interruption is, perhaps, the most encouraging feature observed in the present situation. It is believed by those best informed and closest in touch with the foundry interests that there is in the aggregate a slight increase in the melt. At the same time, the margin of gain, if any, is not significantly large. The question of second half tonnage is being ignored by both the furnacemen and consumers. Some of the latter have signified their willingness to contract for this period on a basis considerably below the present market; but such suggestions receive no consideration from furnacemen. Gradual softening of the market has reduced the price of Southern iron, at least 50c. a ton, and talk of even lower figures are heard, though nothing is found to confirm them. Practically all of the furnaces are producing at a rate exceeding the present demand, so that unless trade picks up quickly or some stacks are blown out stockpiles will begin to grow. The following quotations are for March delivery, f.o.b. Chicago:

Lake Superior charcoal	\$19.50 to \$20.00
Northern coke foundry, No. 1	17.00 to 17.50
Northern coke foundry, No. 2	16.50 to 17.00
Northern coke foundry, No. 3	16.00 to 16.50
Northern Scotch, No. 1	17.50 to 18.00
Southern coke, No. 1	16.85 to 17.35
Southern coke, No. 2	16.35 to 16.85
Southern coke, No. 3	15.85 to 16.35
Southern coke, No. 4	15.35 to 15.85
Southern coke, No. 1 soft	16.85 to 17.35
Southern coke, No. 2 soft	16.35 to 16.85
Southern gray forge	14.85 to 15.35
Southern mottled	14.60 to 15.10
Malleable Bessemer	16.50 to 17.00
Standard Bessemer	17.90 to 18.40
Jackson Co. and Kentucky silvery, 6%	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8%	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10%	22.90 to 23.40

Billets and Rods.—Some inquiries have come into the market for considerable tonnage, but most of them seem to be prompted by a purpose to ascertain the actual market level, rather than a desire to place immediate orders. The price of billets does not seem to be as clearly defined as are the values applying to some lines of finished products, notably plate and bars, although \$23, Pittsburgh, is generally recognized as the nominal quotation. While in the actual transactions reported there is no trustworthy evidence of lower figures having been made, yet negotiations have developed a willingness on the part of some makers to underbid this figure on desirable tonnage. Practically all of the forging billets made in this district are converted into finished products by the makers, so that normally there is no surplus offered in the open market. For this reason interest in crude steel is confined locally mainly to axle and forging billets. One inquiry for 1000 tons of small rolling billets required by a Western manufacturer for consumption in an Eastern branch is reported, and another of like character for 350 tons, likewise for shipment to an Eastern point, has been figured on. The former at least has not been placed and may, perhaps, be classed as a market feeler. In the unsettled state of the market it is impossible to quote definite prices.

(By Mail.)

Rails and Track Supplies.—Included in the rail orders entered by the principal interest during the week are 5000 tons of standard rails and 5000 tons of tie plates, the latter being placed by the Atchison, Topeka & Santa Fe. Besides these there have been booked a few small rail orders from various sources. Specifications for bolts and spikes continue to come in at a fairly good rate, though little new business in these fastenings is reported. Business in light rails is picking up somewhat, but it is still far short of what it should be. There seems to be a considerable variation in the regular prices quoted on light rails as between this and other markets.

Structural Material.—The effects of the low prices now current on fabricated material as a result of the recent cut in steel prices are seen in a decidedly more active demand. This is true not only as respects the amount of new busi-

ness booked, but as evidenced also by the larger aggregate pending. Of the 14,000 tons taken by fabricators in the past week, the principal lot was that of 11,000 tons for the Tooele smelter, placed by the Anaconda interests with the Oscar Daniels Company. Other contracts included 1000 tons for the Twenty-third street viaduct, Denver; 1070 tons for the St. Louis County insane asylum, and 500 tons for the Pemberton apartment building, St. Louis, all of which were secured by the American Bridge Company; 300 tons of girder work for the Chicago, Milwaukee & St. Paul went to the Wisconsin Bridge & Iron Company. Contracts have been taken by the Halsted Street Iron Works for 400 tons to be used in the erection of a new wool building in the stock yards, and the same concern will also fabricate 1200 tons for the Alling Construction Company, for the construction of the Cook County infirmary buildings. W. F. Klemp & Co. have been awarded the contract for the Cort Theater, for which 220 tons will be required. Among the deals pending which will be closed within a day or so are 500 tons for the Chicago Railways Company and 600 tons of plate girder work for the Chicago, Milwaukee & St. Paul, besides which the early placing of 1500 tons by the Minneapolis & Ontario Power Company for a power plant at International Falls is looked for. The most important contract under negotiation is that of 11,000 tons to be used by the Chicago & Northwestern for track elevation in Oak Park, Evanston, Milwaukee and other permanent works. The Northern Pacific's inquiries for 3000 to 5000 tons have been reinstated and the Great Northern is in the market for 2000 tons. The American Bridge Company last week booked an aggregate of 35,000 tons, which represents the largest tonnage entered by this interest for any like period since last November. It is reported that the Fuller Company expects to place orders for the 4625 tons of plain material required for the Vendome Building some time this week. In the competition resulting from the declaration of an open market on plain material, some very low prices on fabricated work have been made. Some of them when analyzed exhibit an extremely low basis of cost for plain material; so low, in fact, as to furnish convincing proof that the bottom level has about been reached. It is doubtless due to observations of this kind that buyers are beginning to come into the market more freely.

Plates.—Relatively considered, the plate orders entered in the past week aggregated a fair volume. A large percentage of the business was made up of plates accompanying structural orders. Shops using wide sheared plates are showing more interest than for some time, but have not as a rule come into the market for anything more than current requirements. The price of 1.30c., Pittsburgh, seems to be held firmly, and the various mill interests are apparently disinclined to shade this figure. There is perhaps less irregularity on plates than among other lines of finished material.

Sheets.—The gratifying increase in the amount of business placed last week is regarded as a direct result of the stimulus of lower prices. Orders have been more plentiful and inquiries are coming out in a way that indicate a livelier interest among buyers than had been manifested for some time. It is not believed that either jobbers or manufacturers seriously entertain the idea of considerably enlarging their stocks at this time, but it goes to show that not a little tonnage had been held back in anticipation of the cut that is now available. It is claimed on every hand that stocks throughout the country are comparatively low, and it is therefore reasonable to expect that a general buying movement will begin when there is conclusive evidence that bed rock has been reached. The f.o.b. Pittsburgh schedule of prices quoted in another column, plus freight added, is accepted as the nominal level for this market. These prices, are, however, subject to more or less irregularity and are shaded according to the exigencies of competition.

Bars.—It is evident from the way steel bar specifications have been coming in for the past week that they are not being as closely restricted to current necessities as was the case prior to the recent price reduction. There is nothing, however, to indicate that new long period contracts are being entered. The mills, indeed, seem to be disinclined to consider engagements at the present time extending beyond July 1, but inquiries concerning requirements for the coming year are growing more numerous. Prospects are that the agricultural implement interests and others accustomed to placing contracts beginning July 1, covering their needs for a year ahead, will come into the market considerably earlier this year, and it is not improbable that the booking of such business will begin within the next 30 days. Under the open market competition now prevailing, 1.20c., Pittsburgh, appears to be the general basis for transactions, although there doubtless has been some deviation from this price in special cases. Concessions from the holding price, however, are reported to be comparatively few, and the general tendency appears to be rather toward increased firmness than otherwise. In view of the unrestricted pressure of competition brought to bear upon the market during the past three weeks, there is far less demoralization than might reasonably have been expected. While no large orders for bar iron have been

entered as a result of the late revision of prices, the general demand for the past week has been more generous; and urgency for prompt shipment indicates either larger consumption or a little less careful pruning of orders. Both of these factors probably have contributed to a slight increase in the aggregate of business in iron bars, the regular price of which is 1.40c., Chicago.

Merchant Pipe.—There has been a slight, though not significant increase in the demand for merchant pipe. It is, in fact, a little too early in the season to expect a general buying movement in anticipation of spring trade, but some activity in this direction is looked for before the month is out. Some inquiries from the Northwest have been received concerning pipe for delivery by lake and rail as soon as navigation opens. The new prices are reported to be well maintained; the demand thus far, however, has not been of a character to seriously test their firmness.

Boiler Tubes.—Some improvement in the demand for merchant tubes is reported. Boiler shops appear to be a little more active, and a considerable tonnage has recently been placed by some of the large jobbers.

Merchant Steel.—Orders are beginning to come in more freely, the aggregate thus far for this month showing a considerable increase over the corresponding period in February. This refers mainly to specifications, the proportion of new business being relatively small. It is believed, however, that the placing of new contracts will begin earlier this season than usual, especially if it should become apparent that there is to be no further weakening in prices.

Cast Iron Pipe.—Contracts including 1000 tons for Bisbee, Ariz., and 400 tons for Norton, Kan., have been awarded to the United States Cast Iron Pipe & Foundry Company; the same interest was the low bidder on a letting held last week by the city of Cincinnati. The contract for a year's requirements, estimated at from 250 to 750 tons, let by South Bend, Ind., was taken by the Lynchburg Foundry Company. Interest this week centers in the letting of 45,000 tons by the city of San Francisco, bids for which will be opened March 10. We quote nominally, per net ton, Chicago, as follows: Water pipe, 4-in., \$28; 6 to 12 in., \$27; 16-in. and up, \$25, with \$1 extra for gas pipe.

Old Material.—Trade in scrap has not been nearer a standstill in months than it is at the present time. The fact that dealers find difficulty in disposing of current receipts, even at the low prices now offered, reflects the very limited demand from consumers. The sluggishness of the market is further emphasized by the fact that a small tonnage offered in a list presented last week by the Chicago & Northwestern inspired so little interest that it was withdrawn without sale. While it is recognized that nearly all grades of material are essentially weaker, transactions are too few and unimportant to warrant further revision of prices. A list of 1300 tons will be offered this week by the Atchison. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails.....	\$17.25 to \$18.25
Old steel rails, rerolling.....	13.00 to 13.50
Old steel rails, less than 3 ft.....	13.00 to 13.50
Relaying rails, standard sections, subject to inspection.....	22.50 to 23.50
Old car wheels.....	14.75 to 15.25
Heavy melting steel scrap.....	12.50 to 13.00
Frogs, switches and guards, cut apart.....	12.50 to 13.00
Mixed steel.....	10.75 to 12.25

The following quotations are per net ton:

Iron fish plates.....	\$14.50 to \$15.00
Iron car axles.....	18.00 to 18.50
Steel car axles.....	16.50 to 17.00
No. 1 railroad wrought.....	11.75 to 12.25
No. 2 railroad wrought.....	10.75 to 11.25
Springs, knuckles and couplers.....	11.50 to 12.00
Locomotive tires, smooth.....	13.25 to 13.75
No. 1 dealers' forge.....	9.00 to 9.50
Mixed busheling.....	7.25 to 7.75
Iron axle turnings.....	7.00 to 7.50
Soft steel axle turnings.....	7.00 to 7.50
Machine shop turnings.....	7.00 to 7.50
Cast borings.....	5.50 to 6.00
Mixed borings, &c.....	5.50 to 6.00
No. 1 mill.....	7.25 to 7.75
No. 2 mill.....	6.25 to 6.75
No. 1 boilers, cut to sheets and rings.....	8.00 to 8.50
No. 1 cast scrap.....	12.25 to 12.75
Stove plate and light cast scrap.....	11.25 to 11.75
Railroad malleable.....	11.50 to 12.00
Agricultural malleable.....	10.00 to 10.50
Pipes and flues.....	8.75 to 9.25

Metals.—The recent spurt of buying in copper seems to have been largely speculative, and its effects upon the market were inconsequential. It did, however, stimulate business to some extent among the consuming interests, some of whom bought a little earlier and possibly somewhat more liberally than might otherwise have been the case. In any event, the demand is at present extremely quiet, with no disposition on the part of users to provide for future needs because of apprehension of a permanent upward reaction in prices. Spelter is weaker, and sheet zinc prices are off 25c. There is very little doing in old metals, the values of which are unchanged. Quotations are as follows: Casting copper, 13c. to 13½c.; lake, 13½c. to 14c., in car lots, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots,

30½c.; small lots, 34½c.; lead, desilverized, 3.95c. to 4.05c., for 50-ton lots; corroding, 4.20c. to 4.30c., for 50-ton lots; in car lots, 2½c. per 100 lb. higher; spelter, 4.90c. to 5c.; Cookson's antimony, 10½c., and other grades, 9½c. to 10½c.; sheet zinc is \$6.75, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13c.; copper bottoms, 11½c.; copper clips, 11c.; red brass, 11½c.; yellow brass, 9c.; light brass, 7c.; lead pipe, 3.75c.; zinc, 2½c.; pewter, No. 1, 21c.; tin foil, 23c.; block tin pipe, 26c.

Pittsburgh.

PARK BUILDING, March 10, 1909.—(By Telegraph.)

Pig Iron.—A little inquiry developed a few days ago, but it has not led to business. The Westinghouse Air Brake Company is in the market for 500 to 1000 tons of Bessemer. A sale of 100 tons of foundry iron, silicon 1.50 to 2 per cent., was made at a very low price. The buyer had also inquired for 1000 tons of low phosphorus iron, but withdrew after being quoted about \$21, Pittsburgh. There is no doubt that foundry, malleable, and possibly also basic would sell at considerably lower prices if any attractive inquiry came up. We quote, f.o.b. Valley furnace, Bessemer, \$15.50; basic, \$15; malleable, \$15; No. 2 foundry, \$14.75, and gray forge, \$14, with 90c. freight to Pittsburgh.

Steel.—The leading steel makers are quoting \$23, Pittsburgh, on billets, and \$25.50, delivered, at Pittsburgh, Wheeling, Youngstown, &c., also Buffalo and Canton on sheet bars, and \$25, Pittsburgh, for other points. With both billets and sheet bars the general understanding is to add full freight to destination, but for Chicago and some other districts competitive prices are expected to be made. Sales of billets at \$23, Chicago, would not be regarded as disturbing the \$23 price at Pittsburgh. There have been several sales of sheet bars at the full price, but no sales of billets of consequence, and there is no inquiry to speak of. New prices on wire rods have not been formulated, and the nominal market remains \$33 and \$34, but these prices would be shaded freely.

(By Mail.)

In the steel products on which prices were recently reduced there has been a little increase in business, but total bookings are still relatively small, and do not make a favorable comparison with the average previous to the reductions. A striking feature of the situation in these lines, but particularly in bars, plates and shapes, has been the energy with which buyers have gone out to obtain concessions from the new prices. Any buyer who wished to place an order has made a regular tour of the market, claiming in each instance that he could beat the quoted price, but producers insist that in every case that has been followed out the prices were maintained, and that the business was either not placed or the buyer paid the full price. As a rule, the tonnage has been given to the regular source of supply, and there has not been as much changing around, as some rumors would indicate. There is little reason to believe that any important producers have either lost or gained ground as to their proportion of the total business booked. An important development this week was the definite statement that the cut prices on the wire products of a nearby interest had been absolutely withdrawn, which was promptly taken by the wire trade as removing the possibility of a readjustment in wire products, and it is positively represented that there will be no change in wire for the current season. This is taken as removing the possibility of any readjustment in crude steel or in tin plate. Renewed interest is being given to the question of tariff revision, latest advices being that the new bill will get through sooner than was expected. While it is not believed the revision will have much direct effect upon the trade, it is recognized that a great many are waiting for a settlement of the question before any definite move is made. Manufacturers are very conservative in utterances on the prospect of wage reductions, and there seems to be a definite effort to postpone the expected reductions until about the time the tariff bill is passed. While reductions are reported from other districts, the present prospects are that there will be no general revision in the Pittsburgh District for the present, this statement covering not only the steel mills, but the blast furnaces in the valleys. As to the Amalgamated Association scales, expiring June 30, moves will probably be made for some reductions at that time, and as to the iron scale and the sheet scale they will probably succeed. In tin plate, on the other hand, the situation seems to be that there has been so much deferring of business that the tin mills may find themselves on June 30 with no business to be done, depending on the crops, that they will be rather moderate in their demands for a reduction.

Ferromanganese.—The market is very weak. Prices are nominally \$42 for prompt lots and \$43 for forward de-

livery, seaboard, the freight to Pittsburgh being \$1.95. Only small lots, chiefly carloads, have been changing hands, and on these \$42 has sometimes been shaded.

Ferrosilicon.—The market has been too quiet to test prices seriously, and \$62, Pittsburgh, can be quoted nominally for 50 per cent.

Muck Bar.—The muck bar market is still at sea, on account of changes in the finished product and the declining tendency of scrap, so that no definite quotations are being made.

Wire Rods.—No change has been made in official prices, which remain on the basis of \$33 for Bessemer wire rods, but the market is not firm on this basis and prices could doubtless be shaded on any desirable order.

Steel Rails.—No new business in standard rails is reported since the New York Central distribution. There is sharp competition on the part of the steel mills for what light rail business is going, and as low as \$21 has been done on sections of 16 to 45 lb., the regular quoting basis being about \$23. The rerolling mills have not been able to get much business at such prices and are largely closing, although old steel rails for rerolling have been obtained in the past week at \$15.50, delivered, Sharon, and \$15.25, delivered, Cambridge. Standard rails remain on the basis of \$28.

Plates.—The new price of 1.30c. on plates is reported to be well maintained by the leading interests, while the smaller mills, which were regularly cutting for a long time before the reduction, are not in position to shade the new price, and are holding back. Relatively little new business has been booked, and not a great deal is expected in the near future. Steel car buying has about stopped, pending a clarifying of the situation, while all the plates needed for car orders already booked were covered at the time. Shipments on such business are fairly satisfactory.

Structural Material.—Fabricating interests are making close estimates on the small jobs that are coming up. There has been a great deal of maneuvering for lower prices, but mills report that the 1.30c. price has been maintained on ordinary business.

Sheets.—The new "official" prices promulgated by the independents, as noted in last report, are being quite well maintained for ordinary business, while on large and attractive orders there is shading, in some cases, down to the lowest prices made by the leading interest, which are about \$2 a ton lower on black and about \$1 a ton lower on galvanized than the new "official" prices. Business has been rather light. A few of the independent mills state that they cannot get along on the new basis, and are closing, but in some quarters this is regarded merely as a strategic move against the sheet bar market. The new quoting basis will be found elsewhere under "Prices, f.o.b. Pittsburgh."

Tin Plate.—Confidence has not been restored among buyers of tin plate, and new business has been light. The mills insist that there will be no change in prices for the current season, and are advising buyers to take their plates. Mill operations are about as formerly, the independents running almost full, while the leading interest is operating about 164 of its 242 tin mills. The market is quoted at the straight \$3.65 for 100-lb. cokes, there being no longer any talk of the \$3.70 price with a 5 cent rebate.

Bars.—New business has been better in steel bars than in any other finished steel product, but still does not make a favorable comparison with what was being done prior to the readjustment. The mills report that all efforts to break the new 1.20c. price have failed, all tonnage booked having been taken at the full price. The extras for small quantities of a size have been eliminated, while full half extras for given sizes are being maintained. Orders are being taken for delivery up to July 1, but generally no business extends beyond that date. Iron bars remain at 1.40c., Pittsburgh, but this price is nominal and the market is weak. There has been no shading of consequence as scarcely any business has been offered. Scrap prices have been declining, and the mills will likely be able to make some concessions when the market is straightened out.

Hoops and Bands.—New business has been rather light, but some has been taken at the new prices, which are 1.60c. base, for steel hoops, with full hoop card extras, and 1.20c. base, for steel bands, half steel card extras.

Railroad Spikes.—Shipments on old contracts are being made, but little new business has developed. Prices are maintained on the old basis, producers insisting that nothing has developed to require a revision. We quote: Standard sizes, 4½ x 9-16 in., \$1.70, and the smaller sizes at \$1.80 per 100 lb., in carload and larger lots, with an advance of 5c. per 100 lb. for less than carload lots, f.o.b. Pittsburgh.

Merchant Steel.—No change has been made in shafting prices, which remain at 57 off in carload lots and 52 off in less than carload lots, delivered in base territory. Very little new business has been placed in the past week. Prices are not altogether firm, but are represented as being shaded not much more than formerly.

Merchant Pipe.—The new prices on steel pipe are being

well held, but business has continued light. Jobbers are stated to have been carrying fair stocks and are not eager in making further purchases. The local producers of iron pipe are holding to the new discounts, but shading of this basis by some Eastern mills continues.

Boiler Tubes.—There have been no developments, the market remaining quiet.

Iron and Steel Scrap.—The first definite line on the scrap market since the readjustment in rolled products began has been furnished by the awarding of scrap on the lists of the Pennsylvania Lines west of Pittsburgh. The Baltimore & Ohio's list is about to be bid on, awards being due at the end of the week, while the Pennsylvania Railroad's list should be awarded next week. On the list of the Pennsylvania Lines west the heavy melting scrap, some 900 tons, went at \$14.65, delivered Pittsburgh and Steubenville; the rerolling rails, some 1200 tons, went at \$15.50, delivered Sharon, and \$15.25, delivered Cambridge, and the No. 1 wrought scrap, about 350 tons, went at \$14, delivered Pittsburgh. Some interests in the trade are inclined to think that the bids on the heavy melting scrap were higher than the situation warrants, as not over \$14.25 is bid by any consumer, and while there are short contracts, dealers are not pressed to get material to ship on them. The Pennsylvania Company's wrought scrap, on the other hand, went at considerably below the previously quoted market, and the new price is regarded as fair in relation to the reduced market price of steel bars, as the trade generally takes it that No. 1 wrought scrap should be one-half the price of bars, and 1.20c. for steel bars is \$24 a net ton, half of this being \$12 per net ton or \$13.44 per gross ton, and \$14 on wrought scrap would give the iron mills a fair chance. We revise prices as follows, per gross ton, f.o.b. Pittsburgh: Heavy steel scrap, \$14.25 to \$14.75; cast iron borings, \$8.50 to \$9; bundled sheet scrap, \$11.50; No. 1 busheling scrap, \$12.50 to \$12.75; No. 2, \$9.50; No. 1 railroad wrought, \$14; No. 1 cast, \$14 to \$14.50; iron axles, \$19.50 to \$20; sheet bar crop ends, \$16 to \$16.50; low phosphorus melting stock, 0.04 and under, \$16.75 to \$17.25; rerolling rails, delivered Cambridge, Ohio, \$15.25; Sharon, Pa., \$15.50; steel axles, \$16.50 to \$17; grate bars, \$10.50 to \$11; old car wheels, \$15 to \$15.50; machine shop turnings, \$10.25 to \$10.50; railroad malleable scrap, \$13.25; iron rails, \$16 to \$16.50; locomotive tires, \$16 to \$16.25.

Coke.—There is no interest in contract coke, and only occasional sales are made of prompt coke. While a number of interests have blown out ovens in the past few weeks, other ovens have come in, and the relation between supply and demand is not yet satisfactory. One change is noted, however, that whereas some producers were formerly carrying a large amount of coke in cars, they are now carrying smaller quantities, and it is not so easy to pick up a large block of prompt coke. The regular quotation on prompt furnace coke of standard grade is \$1.60 per net ton, at oven, but coke is sometimes picked up at \$1.55 or \$1.50. On contract, furnace coke is quoted all the way from \$1.75 to \$2, but these quotations are largely nominal. Standard 72-hr. foundry coke is being held at about \$2, but this price is being shaded on occasion. Contract foundry coke is quoted at \$2 to \$2.25, according to brand, &c.

Philadelphia.

PHILADELPHIA, PA., March 9, 1909.

The iron and steel markets generally continue unsettled. With the exception of several orders for round lots of plates and shapes, business has been along narrow lines, consumers taking only sufficient to care for current orders, which are usually small. While there is a fairly even range of prices for rolled products, in moderate lots for prompt shipment, there is hardly a doubt that when large quantities are involved lower prices may be had, but such transactions are carefully covered, and it is next to impossible to get at the real price. The tariff question and wage reductions are leading influences in the market. Wages have been cut 10 per cent. by a number of rolling mills, but the larger iron and steel interests, while seriously considering the matter, are deferring action until something definite is known regarding the tariff. The reduction of wages of furnace labor has been agitated during the week. Current report had it that the Eastern Pig Iron Association had officially considered the matter, and had practically agreed upon a cut of 10 per cent. This, however, has been denied by the officials of the association, who contend that it was not formally discussed and that such action does not come within the scope of the organization. There is no doubt, however, that producers in this territory are individually considering the question, but their action will be largely dependent on the result of tariff legislation. The most important transactions during the week were the placing of a contract for 6500 tons of structural material by the Pennsylvania Railroad Company and an order for 7000 tons of plates for car work understood to have been taken by an Eastern plate mill.

Pig Iron.—Scarcely enough business has been done in any grade to establish a market. The few orders taken have

been almost entirely confined to foundry grades, consumers taking only small lots for prompt shipment, covering immediate needs. There is no disposition on the part of buyers, except cast iron pipe makers, to come into the market, it being quite evident that under the present conditions prices can hardly advance, and they are taking chances on possible lower prices. Sellers are not urging business, it being practically certain that buyers could not be interested under existing conditions. While new orders are scarce, not a great deal of iron is being piled in the East, owing to the fact that the majority of furnaces are pretty well sold up, and buyers continue to take regular deliveries. The cast iron pipe makers are the only branch of the trade showing any interest in the market, one inquiring for some 20,000 tons, mixed grades, but it is not known as yet whether it means business or only a line on the market to cover quotations. Most sellers claim that they are unable to meet the views of these consumers as far as prices are concerned. Sales are usually less than 100 tons, anything above the latter being extremely scarce. Prices show practically no change, the little business done having been around \$16.50 to \$16.75, delivered, for standard No. 2X foundry. What could be done on a round lot, however, would depend on how badly the seller needed business, but on some grades the price would, no doubt, be shaded. There is some talk about near future requirements of forge iron, but no direct inquiries have come out, and no new prices have been named. Virginia foundry irons have been in light demand, and no important transactions have been reported; prices, however, are not considered strong. Southern iron is weaker, some sellers appearing more disposed to go after business, and low grade irons have been offered to cast iron pipe makers considerably under recent quotations, but still not low enough to induce buyers to contract. Melters of basic and low phosphorus iron are still out of the market, and prices are entirely nominal. The market has in no way been tested, and quotations are unchanged, the following range representing prices for standard grades, delivered in buyers' yards, eastern Pennsylvania and nearby points, for prompt shipment:

Eastern Pennsylvania, No. 2 X foundry	\$16.50 to \$16.75
Eastern Pennsylvania, No. 2 plain	16.00 to 16.25
Virginia, No. 2 X foundry	17.00
Virginia, No. 2 plain	18.50 to 18.75
Gray forge	15.50 to 15.75
Basic	16.00
Low phosphorus	21.50

Ferromanganese.—The market is at a standstill. In the absence of demand prices are nominally quoted at \$42 to \$42.50, Baltimore, but would, no doubt, be shaded for actual business.

Billets.—Consumers make few inquiries and quotations are largely nominal. The question of prices does not yet appear to be established, although it now looks as if \$23, Pittsburgh, or \$24.20, delivered in this territory, would be the ruling price for ordinary rolling billets, forging billets taking the usual \$2 advance, subject to the usual extras.

Plates.—The most important transaction has been the reported order for 7000 tons of plates for car work, taken by an Eastern mill, but particulars are lacking. The usual run of business has been small, covering immediate requirements of consumers. On moderate lots independent mills meet the 1.30c., Pittsburgh, base, but small lots are quoted from \$1 to \$2 a ton higher, dependent upon the specification. On large tonnages further cutting is reported. For delivery in this territory current business is taken at 1.45c. to 1.50c., dependent on the size of the order, the usual extras applying.

Structural Material.—More activity is shown in this line than in any other rolled product. The leading feature of the week has been the placing of an order for 6500 tons with the American Bridge Company, for the elevation of the Pennsylvania Railroad tracks on Trenton avenue, in this city. This contract is understood to have gone at a very low price. Fabricators in this district are bidding on some fairly good sized buildings in other sections, while some small bridge work is also being figured on. Miscellaneous business aggregating a fair tonnage has been taken by local mills at prices ranging from 1.45c. to 1.55c., delivered in this district, although it is reported that these prices can be shaded for good quantities.

Sheets.—There has been a slight improvement in the demand, although on the whole business is still irregular and small in volume. Mills are not actively engaged and are operating largely on a day to day basis. The reduction of \$2 a ton named by the independents appears to have put prices on a firmer basis, and quotations for delivery in this territory now range as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

Bars.—Little business is pending, as consumers are not anxious to come into the market under prevailing conditions. Reductions of wages have been announced by a number of mills, and it is believed will be general in this district. Ten per cent. represents about the usual cut. Several of the mills are idle, others running irregularly. Some moderate business has been done in steel bars at 1.35c. to 1.40c., delivered. Refined iron bars are quoted from 1.42c. to 1.47c.,

delivered, but ordinary bars can be had at the same price as steel bars.

Coke.—Transactions are on a meager scale, confined largely to small spot lots of foundry coke. There is practically no demand for furnace coke. Prices are weak and concessions have been made for prompt shipments of some grades. For delivery in this territory the following range of prices is quoted:

Connellsville furnace coke.....	\$3.75 to \$3.90
Foundry coke.....	4.25 to 4.50
Mountain furnace coke.....	3.35 to 3.50
Foundry coke.....	3.85 to 4.10

Old Material.—Buyers and sellers for the most part still differ widely in their ideas regarding prices. In many grades no business whatever has been done, and prices are entirely nominal. One transaction involving 1000 tons of rails is reported at \$14, delivered. Other sales have been small and unimportant. Quotations show a wide range, and represent largely sellers' ideas, which, for prompt delivery in buyers' yards, eastern Pennsylvania and nearby points, are as follows:

No. 1 steel scrap and crops.....	\$13.50 to \$14.50
Low phosphorus.....	17.00 to 18.00
Old steel axles.....	17.00 to 18.00
Old iron axles.....	18.00 to 19.00
Old iron rails.....	17.00 to 18.00
Old car wheels.....	14.00 to 15.00
Choice No. 1 R. R. wrought.....	15.00 to 16.00
Machinery cast.....	14.00 to 14.50
Railroad malleable.....	13.00 to 14.00
Wrought iron pipe.....	14.00 to 14.50
No. 1 forge fire scrap.....	12.00 to 13.00
No. 2 light iron.....	8.50 to 9.00
Wrought turnings.....	10.75 to 11.25
Stove plate.....	11.75 to 12.25
Cast borings.....	8.50 to 9.50
Grate bars.....	12.00 to 12.50

Birmingham.

BIRMINGHAM, ALA., March 8, 1909.

Pig Iron.—More interest on the part of the trade, as indicated by recent inquiries, is reported, and the aggregate of small lots for prompt shipment engaged during the past week is larger than for the week previous. The status of prices is practically unchanged. The leading producing interests adhere to former quotations of \$13, Birmingham, in the absence of evidence that lower asking prices would stimulate the demand, and the business offered has gone to smaller concerns and merchants at figures considerably lower. Of the sales recorded a lot of 1500 tons of gray forge for delivery commencing immediately is the most significant transaction. An aggregate of 800 to 1000 tons of No. 2 Foundry in lots of 100 to 150 tons was engaged for early shipment, and 400 tons of the same grade for delivery covering the first half. The sale of 1000 tons of analysis iron is reported at \$13, Birmingham, for silicon content of 2.25 to 2.50 per cent. High manganese iron in carload lots is reported sold at \$13.50. It is not believed that lower figures than \$12.50 have been named in any case, although it is understood that a firm offer on a round tonnage would elicit such figures from the leading producers. With the schedule of \$12.50, Birmingham, for No. 2 established, it is quite likely that the available resale iron could be had at still lower figures, but at present there are no indications of a uniform asking price at an early date. A notable feature of the situation is the rate at which stock accumulations have increased when compared with the output, and the inactivity of the market for some months. The rate of production has so far been curtailed in only one instance, and, notwithstanding the manifested disposition toward such action, rather than increase stocks under existing conditions, additional idle capacity is not anticipated in the near future.

Old Material.—Dealers' asking prices are revised, but the demand is of such a nature that a criterion of values is not afforded, and nominal quotations only are warranted. The market is practically lifeless, with nominal quotations as follows, per gross ton, f.o.b. cars here:

Old iron rails.....	\$14.00 to \$14.50
Old iron axles.....	15.00 to 15.50
Old steel axles.....	12.50 to 13.00
No. 1 railroad wrought.....	12.50 to 13.00
No. 2 railroad wrought.....	10.50 to 11.00
No. 1 country.....	9.50 to 10.50
No. 1 steel.....	9.50 to 10.00
No. 1 machinery.....	10.00 to 10.50
Tram car wheels.....	11.00 to 11.50
Standard car wheels.....	12.50 to 13.00
Stove plate and light cast.....	8.00 to 8.50
Cast borings.....	4.50 to 5.50

Cast Iron Pipe.—The interest of Southern producers is at present centered on lettings to be held along the Pacific Coast within the coming week. It is expected that sufficient tonnage will be awarded Southern plants to take care of the entire capacity during the spring months, and that prices will be inclined toward a higher basis rather than to decline, as in the case of raw material. The additions to order books within the past week have consisted principally of small orders for maintenance work, but by reason of heavy shipments against Cuban contracts, the movement from this dis-

trict has been unusually large. A local manufacturer is preparing to install additional equipment for the production of the larger sizes which will probably be in operation within 60 days. We quote water pipe as follows, per net ton, f.o.b. cars here: 4-in. to 6-in., \$26; 8-in. to 12-in., \$25; over 12-in., average, \$24, with \$1 per ton extra for gas pipe. For large municipal contracts these quotations are probably shaded.

Cincinnati.

CINCINNATI, OHIO, March 10, 1909.—(By Telegraph.)

Pig iron sellers are profiting by the experiences through which the steel trade is going, and the wise ones who have followed the trend of affairs affirm with considerable emphasis that no bargain days will be announced by pig iron makers to stimulate business, but that the next thing to be anticipated from the furnace district will be a restriction of output. These same people who have been in a position to keep track of the volume of business brought out by the open steel market declaration realize that the amount of this business, save perhaps in steel bars, has been a disappointment to big interests. Some of the leading iron producing interests in the South have had their representatives in the larger selling districts take memoranda of iron on foundry yards with a view to determining how the melters were stocked up for the future. It has been found that nearly all have heavy stocks, and the way current business is going there will be some carried over into the last half. The furnacemen realize that unless the tariff and other disturbing matters are settled within 60 to 90 days they will find it profitable to blow out and begin a campaign for selling on immediate delivery from their own surplus stocks.

Pig Iron.—A very uneasy tone pervades the market, and the most portentous rumbling comes from the South. While \$12, Birmingham, for No. 2 is the nominal quotation to-day for Southern iron, some furnaces are advising their representatives that they have withdrawn for second quarter business at that figure and will accept contracts for no later than March and April delivery. Resale iron is still a bugbear to agents, another brand of Southern product reported to be going at \$11.50 for a grade analyzing about No. 3 foundry. So far as can be ascertained, Southern furnaces are uniformly refusing to announce themselves for the second half. Inquiries are accumulating for iron for this delivery and some tentative offers are ventured, based on the present demoralized conditions, but the furnaces evidently look for a clearing of the atmosphere before July. A number of late inquiries are characterized by agents as merely feelers, notably one of a large car manufacturing concern, which asked for prices on 8000 tons for tidewater shipment. The International Harvester Company purchased on Monday 500 tons of Southern iron for shipment to its Springfield, Ohio, plant for early delivery. It is reported here that the largest pipe interest has closed a contract for 24,000 tons of Southern iron, divided into 8000 tons each of No. 2, No. 4 and forge, for shipment over the next five months. A stove works at Detroit is credited with a recent purchase of 500 tons of high silicon iron. Not so much is heard of the Northern furnaces, and the price seems rather firm, at \$14.50, Ironton. Ohio silvers are still held at \$18.50 for 8 per cent., with producers in the Red River District quoting on the same basis. For immediate delivery and balance of the first quarter we quote, f.o.b. Cincinnati, with freight rates of \$2.25 from Birmingham and \$1.20 from the Hanging Rock District, as follows:

Southern coke, No. 1 foundry.....	\$15.75 to \$16.25
Southern coke, No. 2 foundry.....	15.25 to 15.75
Southern coke, No. 3 foundry.....	14.75 to 15.25
Southern coke, No. 4 foundry.....	14.25 to 14.75
Southern coke, No. 1 soft.....	15.75 to 16.25
Southern coke, No. 2 soft.....	15.25 to 15.75
Southern coke, gray forge.....	13.75 to 14.25
Southern mottled.....	13.25 to 13.75
Ohio silvery, 8 per cent. silicon.....	19.70
Lake Superior coke, No. 1.....	16.20 to 16.70
Lake Superior coke, No. 2.....	15.70 to 16.20
Lake Superior coke, No. 3.....	15.20 to 15.70
Standard Southern car wheel.....	22.25 to 23.25
Lake Superior car wheel.....	21.75 to 22.75

(By Mail.)

Coke.—The market is exceedingly quiet. About the only change observable is that the spot and forward delivery markets on furnace brands are more nearly identical. On furnace grades there is a wider spread than has been noted for a long time, the price varying from \$2 to \$2.65, at oven, according to grade, on the Connellsville product. No change is noted in the prices of Virginia brands, which range from \$1.75 to \$2, at oven, on the furnace product and from \$2.10 to \$2.25 on foundry.

Structural Material.—The feeling among the larger agencies here is that the open market has been of service in starting a line of inquiry which is gradually developing into sales. While nothing phenomenal is happening, architects and engineers are preparing drawings which promise to develop into business before summer. Some anxiety is felt over the opening of bids (originally announced for the 9th) for the structural material for the new City Hall Building, Indianapolis, which has been postponed till the 11th. About

2000 tons will be needed. The price of 1.30c., Pittsburgh, is being quite uniformly maintained, so far as can be ascertained.

Sheets.—There seems to be more uncertainty in this market over the price of sheets than any other of the commodities affected by the open market declarations. The largest producers in this field, the Andrews Steel Company and the Newport Rolling Mill Company, owned by the same people, are not inclined to act aggressively in the present market stage, and as a part of their policy have shut down the two plants for a few weeks; having enough stock on hand to take care of any ordinary early business. The new price of 2.30c., Pittsburgh, on No. 28 box annealed sheets is reported to have been modified to 2.20c. on acceptable deliveries, and No. 28 galvanized from 3.30c. to 3.25c.

Bars.—Steel bars seem to be stronger in this market than any of the finished products most in the public eye through the open market declaration. The week has opened well with the leading sales agencies, and the morning mails of Monday brought some fair orders. The price is fairly firm at 1.20c., mill delivery, or 1.35c., Cincinnati, and 1.65c., local store sales among dealers, with a special quotation for outside points of 1.60c. in close competition.

Old Material.—Dealers are disinclined to quote on old material this week, announcing that there is practically no inquiry of any kind, and that they themselves are in the dark as to prices. Occasionally one hears of a special hurry sale of some select material, such as No. 1 railroad wrought, and in these cases the price is not so far out of line. The dealers who make this market are apparently withdrawn until the atmosphere is settled, and this holds true also of the speculative pig iron which was much in advance the past six or eight weeks.

St. Louis.

ST. LOUIS, March 8, 1909.

In such lines of business as are affected by the prospective tariff revision, there is a pronounced disposition to purchase in a cautious manner. It is not expected there will be any notable change for the present, except in such classes of iron and steel as are required for building purposes and in some manufacturing establishments (wagon and agricultural implements), where some increase of activity is observable. A somewhat better demand is observed for certain classes of rolled steel, on which prices have been reduced.

Coke.—The demand for coke seems to be confined to comparatively small lots, for prompt shipment, though a few inquiries are pending for round lots. Early in the week a sale of 500 tons of foundry was made for shipment over the third quarter, basis of current market figures. Leading sales agents state that the inquiry is better from outside points than is the case in the local market. Prices are as follows: For 72-hr. foundry, standard quality, Connellsville, spot shipment, \$2.15; contracts to January 1, 1910, \$2.25; contracts for shipment over one year from March, \$2.35.

Pig Iron.—There appears to be some irregularity in the reports made by the different offices regarding the demand for pig iron. Parties whose business is mainly confined to the local market state that it is very quiet, while, on the other hand, the houses which rely principally upon smaller buyers situated at country points find a fair inquiry prevails. A sale was made at the beginning of last week of 2000 tons malleable Bessemer. Later, there were inquiries for some 100 ton and 300 ton lots, Southern iron. Concerning the price, while some sellers are inclined to believe that an offer of \$12, Birmingham, would be accepted for a round lot for spot shipment, neither these parties or any of the brokers are offering standard quality Southern iron for less than \$12.25. For shipment over the first half, the price is nominally \$13.

Lead, Spelter, Etc.—A better demand is experienced for pig lead from brokers and consumers, and at the close sales were made at 3.85c. Lead ore is held at \$24 to \$25 per 1000 lb., Joplin. Spelter is also meeting with an improved inquiry. The price range is 4.65c. to 4.75c., for galvanizing, to 4.80c. to 4.90c., for brass. Some melters have been in the market for small quantities, and there is a pretty good demand from galvanizers. Zinc ore is quoted at \$34 to \$37 per ton, Joplin, base, the former figure for low, and the latter figure for high grade. Conditions, generally, are becoming more encouraging, and higher prices are expected to prevail in the quite near future. Copper is up 1/4c. The demand for metals has been quite fair during the week. Stocks of some raw materials are low, and orders are not being filled promptly.

Old Materials.—The leading dealers state that in a long time they have not witnessed such a stagnant market for scrap iron and steel, there being no demand from any source or chance for sale at reasonable figures. Quite large offerings by the railroads tend to weaken the situation under present conditions. At the same time, they seem indifferent and not disposed to attempt to press material in the market, believing matters will right themselves after awhile. The

principal railroad lists issued this week are as follows: San Francisco & St. Louis, 2500 tons; Missouri Pacific, 2000 tons. While we make no change in the prices given below, the figures are merely nominal, per gross ton, f.o.b., St. Louis:

Old iron rails.....	\$15.00 to \$15.50
Old steel rails, rerolling.....	13.00 to 13.50
Old steel rails, less than 3 ft.....	12.00 to 12.50
Relaying rails, standard sections, subject to inspection.....	23.50 to 24.00
Old car wheels.....	13.50 to 14.00
Heavy melting steel scrap.....	12.00 to 12.50
Frogs, switches and guards, cut apart.....	12.00 to 12.50
Mixed steel.....	8.00 to 8.50

The following quotations are per net ton:

Iron fish plates.....	\$13.50 to \$14.00
Iron car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	10.50 to 11.00
Railway springs.....	10.00 to 10.50
Locomotive tires, smooth.....	11.00 to 11.50
No. 1 dealers' forge.....	9.00 to 9.50
Mixed borings.....	4.50 to 5.00
No. 1 boilers, cut to sheets and rings.....	7.50 to 8.00
No. 1 cast scrap.....	10.50 to 11.00
Stove plate and light cast scrap.....	8.00 to 8.50
Railroad malleable.....	8.50 to 9.00
Agricultural malleable.....	8.00 to 8.50
Pipes and flues.....	8.00 to 8.50
Railroad sheet scrap.....	8.50 to 9.00
Railroad grate bars.....	9.00 to 9.50
Machine shop turnings.....	7.00 to 7.50

Cleveland.

CLEVELAND, OHIO, March 9, 1909.

Iron Ore.—A meeting of the officials and engineers of the Pittsburgh Steamship Company and Pickands, Mather & Co. this week is attracting a great deal of attention because of the contest between the vessel owners and the Marine Engineers' Beneficial Association, the Engineers' Union, over the open shop policy. President Coulby of the Pittsburgh Steamship Company, in addressing the engineers, told them that his company would not recede from its position, and before calling the meeting said that any of the men who had signed individual contracts could return them. Only five did so. About 140 engineers attended the meeting, the two companies employing 220 engineers. The vesselmen are confident that the open shop policy will win. Although the merchant ore men have not yet formally taken up the question of prices for the coming season, it still seems to be the opinion that last season's prices will be maintained. In view of the fact that they made a reduction of 50c. a ton last year, ore men say they should not be expected to make further cut this year, even if there has been a readjustment in steel prices. While some ore has already been sold slightly under last year's prices, the tonnage offered is not large enough to affect the leading producers. The ore movement from the docks to furnace yards has increased materially since March 1 and is now fairly good. Prices at Lake Erie docks, per gross ton, are as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The market continues quiet. A few inquiries have developed for foundry iron for last half delivery, but some of these are regarded as market feelers. Two of the inquiries are for 500 tons each for the last half and another from an Ohio boiler plant is for 500 tons each for the second, third and fourth quarters. Prices remain about stationary at \$15, Valley furnace, for No. 2 foundry, but this would probably be shaded for a round lot. Recent transactions have been too small to test the market. The Eastern demand shows a little more activity. A local interest received inquiries during the week for two lots, one of 8000 tons of foundry iron and the other for 2000 tons, for delivery in Massachusetts, from April 1 to the end of the year. For March and second quarter delivery we quote, delivered, Cleveland, as follows:

Bessemer.....	\$16.40 to \$16.65
Northern foundry, No. 1.....	16.25 to 16.50
Northern foundry, No. 2.....	15.75 to 16.00
Northern foundry, No. 3.....	15.25 to 15.50
Gray forge.....	14.50 to 14.75
Southern foundry, No. 2.....	16.35 to 16.85
Jackson County silvery, 8 per cent. silicon.....	20.05

Coke.—The market continues very quiet. Prices are about stationary. Standard Connellsville furnace coke is quoted at \$1.60, at oven, for spot shipment, and \$1.85 to \$2 on contract. We quote 72-hr. Connellsville foundry coke at \$2 to \$2.25 for spot shipment and \$2.15 to \$2.40 on contract.

Finished Iron and Steel.—The mills so far are firmly adhering to the new prices on steel bars, plates and shapes, and buyers have become fairly well satisfied that there will be at least no immediate further reduction in prices. As a result of this feeling, and perhaps stimulated somewhat by lower prices, the market has become more active and some of the leading mill agencies report that the tonnage booked during the past week will aggregate twice as much as that taken during a corresponding period in the few weeks preceding the readjustment of prices. Although less numerous,

there are still rumors that the new prices are being shaded, but none of these reports can be confirmed. Practically all the business that is coming in is specifying on old contracts at new prices or current orders from consumers who were not previously under contract. On that account the tonnages that are being booked are mostly small. As far as can be ascertained mills are holding firmly to the policy of taking orders at present prices only for delivery until July 1. A few buyers have placed specifications for delivery as far as into June, but most orders are for immediate delivery. The largest improvement in the demand is noticed in steel bars and shapes, although plate orders are showing a gradual improvement. There is a fair inquiry for billets and a few orders have been placed for forging billets. We quote steel bars at 1.20c., Pittsburgh, and plates and shapes at 1.30c., Pittsburgh. The demand for iron bars has not been stimulated by the price reduction. Local mills quote iron bars at 1.25c., Pittsburgh. This might be shaded to 1.30c., Cleveland. The independent sheet mills appear to be firmly maintaining the new prices adopted at their meeting in Pittsburgh last week, orders at the present prices being taken only for immediate delivery. The demand is light. The County Commissioners of Cuyahoga County (Cleveland) will receive bids April 3 for the superstructure for the Dennison-Harvard bridge. This will require from 5000 to 6000 tons of steel. Other structural work that has come up is grade crossing elimination work by the Nickel Plate Railroad in this city, which will require 600 to 800 tons. The contract for the steel for the Brotherhood of Locomotive Engineers' Building, Cleveland, which was awarded to the King Bridge Company last week, has not yet been placed. It is understood that the contract price for the structural steel, about 2400 tons, was \$37.40 a ton, fabricated and delivered on the site. Jobbers report warehouse business light.

Old Material.—The market is still very unsettled, and as there have been no transactions on which to base values, quotations are to a large extent nominal. Steel making scrap shows a further decline of 50c. to \$1 a ton and malleable scrap is \$1 a ton lower. Mills have stocks on hand or under contract and are in no hurry to buy. Those that are willing to take on some additional tonnage are offering prices so low that dealers refuse to accept the offers. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$12.50 to \$13.00
Old iron rails.....	16.00 to 16.50
Steel car axles.....	17.00 to 17.50
Old car wheels.....	14.00 to 14.50
Heavy melting steel.....	12.00 to 12.50
Relaying rails, 50 lb. and over.....	21.50 to 22.50
Agricultural malleable.....	11.00 to 11.50
Railroad malleable.....	12.50 to 13.00
Light bundled sheet scrap.....	7.50 to 8.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$17.00 to \$17.50
Cast borings.....	6.00 to 6.50
Iron and steel turnings and drillings.....	7.00 to 7.50
Steel axle turnings.....	9.00 to 9.50
No. 1 busheling.....	10.00 to 10.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 1 cast.....	12.00 to 12.50
Stove plate.....	10.50 to 11.00
Bundled tin scrap.....	9.00

Buffalo.

BUFFALO, N. Y., March 9, 1909.

Pig Iron.—There has been a slight improvement in buying, quite generally distributed among the various lines of consumption, with the exception of the railroad interests. The buying is covering only actual requirements, however, and not necessarily influenced by the belief that bottom prices may now have been reached. The impression among furnace men, however, seems to be that prices have reached about as low a level as they are likely to go, even with the possibility of a reduction in the price of ore, which, if it occurs, will probably not be sufficient to lower the prices now obtainable for pig. Quotations are practically unchanged since last report, and are nominally as follows, f.o.b. Buffalo:

No. 1 X.....	\$16.00 to \$16.50
No. 2 X.....	15.50 to 16.00
No. 2 plain.....	15.25 to 15.50
No. 3 foundry.....	15.00 to 15.50
Gray forge.....	15.00 to 15.25
Basic.....	15.50 to 16.00
Malleable Bessemer.....	16.50 to 17.00
Charcoal.....	20.50 to 21.00

Finished Iron and Steel.—The volume of new business in bars and plates is considerably larger than before the cut in prices, but is made up principally of small orders, to cover immediate requirements of consumers. The week's business included one order of 200 tons of bars. Large contracts are evidently held off, awaiting the tariff adjustment. In structural material the past week has been quiet, but a number of new building projects will soon be ready for figuring. The Buffalo Grade Crossing Commission will this week advertise for bids for steel for superstructures of three subways under the New York Central Belt Line tracks, North Buffalo, involving about 800 tons, and will also soon have specifications ready for subway superstructure and bridge material aggregating 1500 tons for subways to be built under the Erie

in Bailey avenue (14 tracks) and the Erie and the Lehigh Valley in William street, East Buffalo.

Old Material.—With practically no buying and but little inquiry on the part of consumers, dealers are holding out awaiting developments. In the absence of sales of any importance we continue last week's schedule of prices, which are nominally as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel scrap.....	\$14.50 to \$15.00
Low phosphorus steel scrap.....	19.00 to 19.50
No. 1 railroad wrought.....	15.00 to 15.50
No. 1 railroad and machinery cast scrap.....	14.50 to 15.00
Old steel axles.....	18.00 to 19.00
Old iron axles.....	21.00 to 22.00
Old car wheels.....	15.00 to 15.50
Railroad malleable.....	13.50 to 14.00
Boiler plate.....	12.00 to 12.50
Locomotive grate bars.....	11.75 to 12.25
Pipe.....	11.75 to 12.25
Wrought iron and soft steel turnings.....	9.00 to 10.00
Clean cast iron borings.....	7.00 to 8.00
No. 1 busheling scrap.....	13.00 to 13.50

Metal Market.

NEW YORK, March 10, 1909.

Pig Tin.—Forced selling of a small quantity of tin, which was disposed of because the owners needed cash, depressed the market on three days during the week. Two remarkable facts appear in this—the first that there should be any forced selling of tin at this time, and the other that it should take so long to dispose of a small quantity. For a fortnight price changes have been within the narrow limits of 1/4c., and this week prices have been as follows:

	Cents.
March 3.....	28.60 to 28.62 1/2
March 4.....	28.72 1/2
March 5.....	28.45 to 28.55
March 6.....	28.50 to 28.55
March 9.....	28.55
March 10.....	28.65

The forced selling made its appearance on March 5, and on that day and the two succeeding business days, for which quotations are given, low prices ruled, while the import price remained about stationary at approximately 28.62 1/2c. Old timers in the tin trade cannot recollect a period at the corresponding time of the year when business has been as dull as at present. The uncertainties of the tariff, while, of course, not directly affecting tin, are given as the reason for the delay in business. The supplies of tin coming into the market are large. There have arrived so far this month 1305 tons, and there are afloat for American ports 3968 tons. The London market is practically unchanged from last week, closing at £130 2s. 6d. for spot and £131 15s. for futures.

Copper.—The copper market has quieted down to a marked degree. Much of the business done last week was of a speculative nature, and, as pointed out at that time, the volume was greatly exaggerated; yet it is true that there were sales of considerable quantities for forward delivery, both here and abroad. To-day electrolytic is available at 12.62 1/2c., casting at 12.37 1/2c. and lake at 13c. The exports, while larger than at the corresponding time last month, are still small, being 6000 tons so far this month. Figures are now for the first time available of the importation of copper during January, which amounted to 9700 tons. In the lake copper trade the Calumet & Hecla Company apparently is out of the market as a seller, and the other well-known lake brand, Quincy, is being held at 13c. Consumption here apparently is not increasing any, being between 40,000,000 and 45,000,000 lb. a month. The figures published to-day by the Copper Producers' Association occasioned no surprise in the trade. These will be found in another part of this paper. The London market is weak, closing to-day at £56 5s. for spot and £57 for futures.

L. Vogelstein & Co. give the following figures of German consumption of foreign copper for the month of January, 1909: Imports, 11,788 tons; exports, 552 tons; consumption, 11,236 tons, as compared with consumption during the same period in 1908 of 14,100 tons. Of the above quantity, 11,125 tons were imported from the United States.

Waterbury Average.—The Waterbury average for February was 13.25c.

Selter.—The market is somewhat firmer, but business is light. In New York selter is quoted at 4.80c. to 4.85c., and in St. Louis at 4.65c. to 4.70c.

Pig Lead.—Prices are a shade firmer. Whereas, it was possible to obtain lead at 3.95c. last week, sales have since been made at 3.97 1/2c., and to-day 4c. would be nearer the quotation in New York than anything else. In the West lead is held at 3.85c. The tariff question is arousing much interest in the lead market. To-day's quotation for soft Spanish lead in London is £13 7s. 6d., equivalent to 2.92c., London. The freight being 0.10c., it would cost 3.02c., c.i.f. New York. Should the duty be cut in half, it will have no effect on the present price of lead here.

Antimony.—Business is quiet and prices are without change from last week. Hallett's is quoted at 7.75c., Cookson's at 8c. and other less well-known brands at 7.50c.

Tin Plate.—Business is dull, and the few orders being

taken are booked at the old price of \$3.89, New York, and \$3.70, Pittsburgh, for 100-lb. IC coke plates. In Swansea Welsh plates are unchanged at 11s. 7½d.

Old Metals.—The market is very quiet. While the most of the business is among dealers themselves, there is very little even of this. Under these circumstances the following dealers' selling prices are largely nominal:

	Cents.
Copper, heavy cut and crucible.....	12.25 to 12.75
Copper, heavy and wire.....	12.00 to 12.20
Copper, light and bottoms.....	11.00 to 11.50
Brass, heavy.....	9.00 to 9.25
Brass, light.....	7.25 to 7.75
Heavy machine composition.....	11.25 to 11.75
Clean brass turnings.....	7.75 to 8.00
Composition turnings.....	9.75 to 10.00
Lead, heavy.....	3.75 to 3.80
Lead, tea.....	3.50 to 3.55
Zinc scrap.....	3.65

C. W. Leavitt & Co., 30 Church street, New York City, announce they have been appointed selling agents for the Societe Maritime & Commerciale, Antwerp, Belgium. They will handle iron and copper pyrites, copper precipitate, copper matte and manganese ore.

New York.

NEW YORK, March 10, 1909.

Pig Iron.—On iron for early delivery prices have weakened in the past 10 days 25c. to 50c. a ton. Buyers show no interest in forward deliveries, and the furnace companies are not pushing for such business. Stocks at eastern Pennsylvania furnaces are said to have shown no marked increase in the past two months. We quote \$17 to \$17.25 for No. 1 Northern foundry, \$16.25 to \$16.50 for No. 2 foundry and \$15.75 to \$16.25 for No. 2 plain. Alabama iron is sold at \$17 to \$17.25 for No. 1 and \$16.50 to \$16.75 for No. 2 foundry.

Steel Rails.—An inquiry for 30,000 tons is reported in the market, but, as a rule, railroads that have not covered are showing no anxiety to secure spring deliveries. The Long Island has bought 4000 tons of Bessemer rails, and the Delaware & Hudson is expected to place 4000 tons of open hearth rails with the Bethlehem mill. This road has ordered several hundred tons of titanium rails from the Maryland Steel Company.

Structural Material.—The Pennsylvania Railroad's elevated work at Philadelphia, 6000 tons, was taken by the American Bridge Company. The requirements of the Reading Railroad for similar work at Philadelphia will be considerably larger. The Chicago & Northwestern is inquiring for 15,000 tons of bridge work, the Great Northern and Northern Pacific for 2000 to 3000 tons each, the Michigan Central and Nickel Plate for 1000 tons each and the St. Paul for 1200 tons. The New York Central will need 8000 tons additional for its New York terminal work, and the Pennsylvania Railroad is inquiring for 1500 tons more for its Sunnyside yard improvements on Long Island. The Erie has let 400 tons of bridge work to the McClintic-Marshall Construction Company. The Queen & Crescent bridge over the Kentucky River is to be let this week. The City of New York will open bids March 12 for the new Pier 53, which will call for 4000 to 5000 tons of steel. The Jersey Central has placed 500 tons of steel for a new pier shed. For the Florida East Coast plans made some time ago for 206 bridges, many of them of plate girder construction, will probably be taken up soon. It is evident that the new basis for structural material has hastened the placing of some business, but a good many projects, long under consideration, have been laid aside lately; the business of this character marked off in February amounting to about 60,000 tons. We quote, as follows, on mill shipments, tidewater deliveries: Beams, channels, angles and zees, 1.46c.; tees, 1.51c. On beams, 18 to 24 in., and angles, over 6 in., the extra is 0.10c. Structural material, cut to lengths, is sold in small lots at 2c. to 2½c.

Bars.—Trade in bar iron is almost lifeless. Some of the Eastern mills are fortunate in having old contracts on which they are able to keep at work, but quite a number are reported to be running only on part time or have closed down to await an improvement in business. Prices show a wide range, varying from 1.30c. to 1.40c. for common iron and 1.45c. to 1.50c. for best refined iron, at tidewater. The wrought iron pipe trade shows some activity at the reduced level of prices, and manufacturers are in receipt of inquiries indicating that good contracts could be taken if they were willing to book orders for long deliveries at the current low rates. So far they have been unwilling to impose upon themselves such obligations. Steel bars are regularly quoted at 1.36c. to 1.41c., tidewater, but reports are extant that some shading is being done.

Plates.—No improvement is visible in this branch, but orders are confined to quite small lots. Eastern manufacturers are quoting 1.46c. tidewater, on desirable business, and 1.56c. on small lots on the tank plate basis.

Cast Iron Pipe.—On Monday bids were opened by the city of New York on contracts involving about 2500 net tons of 6 to 20 in. As this work has been allotted to contractors, the pipe may not be purchased for a week or two, but it is understood that the contractors have received prices from manufacturers which are fully as low as anything named since the depression set in. In the recent letting at Newark, N. J., the new Standard Company was the successful bidder. That work also went at a very low price. Some inquiry is being received from New England, but the general market is exceedingly quiet and prices are weak. Carload lots of 6 in. are quoted at \$23.50 per net ton, tidewater.

Old Material.—The situation appears to be clearing up somewhat. Feelers are now coming in the market, showing that consumers are more interested and indicating that buying may become better within the next two or three weeks. These inquiries are especially observed in heavy cast scrap, stove plate and wrought pipe, while it is rumored that a fair sized block of steel scrap has been sold. The foundries are buying a little stock, but the rolling mills are doing absolutely nothing. The demand for old car wheels for export has subsided. While some dealers were obliged to part with their accumulations the past week, taking what they could secure, the great majority are tightly holding what they have and will wait for a better market. It is the general belief that rock bottom prices have been reached. Quotations are continued, but with the reservation made last week that these prices mainly represent sales made under pressure and difficulty might be encountered in endeavoring to make purchases at such rates in the regular way. The following quotations are per gross ton for New York and vicinity:

Old girder and T rails for melting.....	\$10.50 to \$11.00
Heavy melting steel scrap.....	10.50 to 11.00
Relaying rails.....	19.00 to 20.00
Old iron rails.....	14.50 to 15.00
Standard hammered iron car axles.....	15.00 to 15.50
Old steel car axles.....	14.50 to 15.00
No. 1 railroad wrought.....	13.50 to 14.00
Iron track scrap.....	10.50 to 11.00
No. 1 yard wrought, long.....	13.00 to 13.50
No. 1 yard wrought, short.....	10.50 to 11.00
Light iron.....	6.00 to 6.50
Cast borings.....	5.00 to 5.50
Wrought turnings.....	6.00 to 6.50
Wrought pipe.....	8.00 to 8.50
Old car wheels.....	13.50 to 14.00
No. 1 heavy cast, broken up.....	11.50 to 12.50
Stove plate.....	9.50 to 10.00
Locomotive grate bars.....	9.50 to 10.00
Malleable cast.....	11.00 to 11.50

Iron and Industrial Stocks.

NEW YORK, March 10, 1909.

The inauguration of the new President of the United States failed to bring with it the activity in the stock market, which had been quite confidently predicted in some quarters. Although those who have most to do with the making of values expressed themselves as pleased with the tone of the inaugural address, their actions were evidently governed by the uncertainties of the immediate future as influenced by the approaching tariff revision. Prices were therefore only moderately strong, an important exception being Railway Spring common, which declined heavily on the publication of last year's report, showing a deficit and the passing of the dividend on the common. The range of prices on active iron and industrial stocks from Thursday of last week to Monday of this week was as follows:

Allis-Chalm., pref. 43½-43¾	Railway Spr., com. 32½-41½
Beth. Steel, com. 19-20	Railway Spr., pref. 99½-100½
Beth. Steel, pref. 49	Republic, com. 18-20½
Can., com. 8-8½	Republic, pref. 71-73
Can., pref. 74-75½	Sloss, com. 70½-72½
Car & Fdry., com. 48½-49%	Sloss, pref. 109½
Car & Fdry., pref. 110½-111½	Pipe, com. 26-26½
Steel Foundries. 36	U. S. Steel, com. 43½-45½
Colorado Fuel. 31-33	U. S. Steel, pref. 110%-111½
General Electric. 152-154½	West. Electric. 78-79
Gr. N. ore cert. 67½-68½	Chi. Pneu. Tool. 21-23
Int. Harv., com. 68-68½	Am. Ship, com. 55½
Int. Harv., pref. 111½-112	Cambrilia Steel. 34½-35½
Locomotive, com. 51-52%	Lake Sup. Corp. 18½-19
Locomotive, pref. 111½-112	Warwick. 7½-8
Nat. En. & St., com. 12%	Crucible St., com. 7½
Nat. En. & St., pref. 88-84	Crucible St., pref. 56½-57
Pressed St., com. 34½-36%	

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 43½%, preferred 110, bonds 103½%; Car & Foundry common 48½%, preferred 111½%; Colorado Fuel 31½%; Pressed Steel common 35, preferred 98; Railway Spring common 34½%; Republic common 19, preferred 70; Sloss-Sheffield common 71½%; Cast Iron Pipe common 26½, preferred 70; Can common 8½, preferred 74½.

Dividends.—The American Car & Foundry Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock and ½ per cent. on the common stock, both payable April 1.

The Railway Steel Spring Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable March 20. The quarterly dividend on the common stock has been passed.

The American Brass Company.

The report of the American Brass Company for the year ending December 31, 1908, shows net earnings of \$1,037,518, a decrease of but \$266,000 from the earnings of the previous year. The net earnings of the subsidiary companies for the past four years were as follows:

1908.....	\$1,037,518	1906.....	\$2,265,798
1907.....	1,303,249	1905.....	1,335,976

The combined balance sheet of the subsidiary companies for the past two years, as of January 1, make the following showing:

Assets.	1909.	1908.
Real estate, machinery, &c.....	\$8,953,147	\$8,169,909
*Improvements	83,833	783,239
Cash	1,002,239	857,422
Accounts receivable	2,959,338	3,812,335
Bills receivable	380,352	}
Stock other, companies.....	3,130,201	2,303,876
Patents	1,000	1,000
Merchandise, raw, wrought and in process	4,172,222	4,582,467
 Totals.....	 \$20,682,333	 \$20,510,248
Liabilities.		
Capital stock.....	\$5,550,000	\$5,550,000
Current accounts and bills payable.....	1,067,631	945,633
Loans from parent company.....	2,333,756	2,533,756
Surplus	10,741,521	10,632,702
Reserve for contingencies.....	989,425	848,157
 Totals.....	 \$20,682,333	 \$20,510,248

* After deducting \$400,000 charged off each year for depreciation.

The American Brass Company was formed early in 1903. It owns the entire capital stock of the Ansonia Brass & Copper Company, Benedict & Burnham Mfg. Company, Coe Brass Mfg. Company and Waterbury Brass Mfg. Company. Through its subsidiary companies it also owns the Ansonia Land & Water Power Company, Birmingham Brass Company, Chicago Brass Company and Waterbury Brass Goods Corporation.

The subsidiary companies have increased their holdings of stocks in other companies by about \$800,000 during the past year. From its subsidiary companies the American Brass Company received in 1908 dividends amounting to \$928,699, while there was paid to the stockholders in the American Brass Company dividends of \$787,500.

Ontario Hydro-Electric Contracts.

TORONTO, March 8, 1909.—The Hydro-Electric Power Commission of Ontario has let the contract for the work on the high voltage transmission line and for the electrical equipment of the 12 stations from which the power is to be distributed. As was reported in this correspondence at the time, the contract for the building of the line was given out some months ago to the F. H. McGuigan Construction Company. The present equipment contract is divided between the Canadian General Electric Company and the Canadian Westinghouse Company. It calls for an expenditure of \$750,000, of which two-thirds will go to the former and the remainder to the latter company. The total outlay to which the Government is already committed for the construction and equipment of the line is rather more than \$2,000,000, the McGuigan Company getting \$1,270,000 for building it. Speaking of the parts of the contract given to his company, Frederic Nicholls, general manager of the Canadian General Electric Company, said:

This will be the first 120,000-volt installation in Canada, but, in view of the development of the art, there will be less difficulty at this date in supplying the necessary equipment for this high voltage than there was with very much less voltages a few years ago. This order will practically result in the restoration of normal conditions at our Peterboro works, where the machines will be made. The contract represents about \$500,000.

Mr. Nicholls' company has also just obtained a \$250,000 contract to supply the generator and motor equipment of the Chilliwack extension of the British Columbia Electric Railway Company, the largest interurban high speed line in Canada. It is believed there will be a great development of high speed interurban lines in Ontario as a result of the Government's cheap power policy.

C. A. C. J.

Effects of the Steel Cut in Canada.

TORONTO, March 6, 1909.—Hugh Sutherland, director of the Atikokan Iron Company, Port Arthur, says that the company expects to blow in its furnace at about the opening of navigation, unless it is found that tariff revision in the United States renders it inadvisable to do so. He says that work cannot well be started up until the American tariff on iron is settled.

Toronto dealers in iron and steel are watching with interest the course of tariff revision in the United States. The effect of the making of an open market in such American steel products as structural shapes, plates, &c., is already being felt in Canada. For some time it has been possible for Canadian importers of such articles to purchase them across the line at the present low prices there. But this advantage had to be given up to the Customs Department in the form of dumping duty. Every reduction from the regular price up to 15 per cent. ad valorem had to be forgone, for if the bargain was accepted, it was the Government and not the private purchaser who pocketed the difference. When, however, the United States Steel Corporation decided to meet the prices of the independents, the cut prices became the regular price in the United States. To a large extent, therefore, the occupation of the dumping clause of the Canadian tariff in reference to steel products is gone. It still applies to rails, but railroad builders are holding off their rail orders in the hope that a cut of \$4 or \$5 in their favor may be effected by resort to further open marketing in the United States. Every time a cut price on an imported article becomes regular, it means a diversion of the difference from the Dominion treasury to the private purchaser.

Officials of the Dominion Iron & Steel Company profess to be undisturbed by the cut in prices in the United States. There seems to be an idea that a lowering of United States duties would be the opening of new doors to the export trade of the company.

Apparently the Algoma Steel Company is not to have its plans upset by the cutting in the United States. Manager Franz of the Lake Superior Corporation, which has recently been taken over by British interests, has issued a statement to the effect that extensive additions to the open hearth furnace capacity will be begun at once.

C. A. C. J.

A Scherzer Bridge in India.

The largest movable bridge in Asia is one of Scherzer rolling lift type recently finished for the Burma Railways Company across the Ngawun River, Burma, India. It is a single track, double leaf bridge, with a span of 220 ft. center to center of bearings. On one side are three approach spans, and on the other two, each 160 ft. long. The substructure is supported on brick masonry piers founded on wells, the construction generally used in India. The track girders on which the moving leaves roll are carried by the adjacent fixed spans, eliminating the piers usually provided to support the rear ends of the track girders. The piers are small and so disposed as to provide ample support with the least possible obstruction to the flow of the river. The Government requires that a clear channel 200 ft. wide be maintained in the river, and a height clearance of at least 40 ft. This would have required a prohibitive grade in the approaches if a fixed span bridge had been constructed. During the rainy season the rivers are subject to heavy floods and obstructions to the flow of the water cause deep holes in the river bed. The bascule bridge has an advantage over the swing bridge on this account, decreasing the difficulty of providing foundations that will be permanent. The bridge is operated by hand power from winches on the deck of the approaches, transmitted by gearing to the main operating struts, of which there are two on each leaf outside of the trusses. The bridge was fabricated in England from a design furnished by the Scherzer Rolling Lift Bridge Company, Chicago, Ill.

The Railway Steel Spring Company.

The annual report of the Railway Steel Spring Company, for the fiscal year ending December 31, 1908, shows a heavy reduction in earnings, as compared with the previous year. The gross earnings were \$5,920,464, and the manufacturing and administrative expenses were \$4,774,945, leaving a balance of \$1,145,519. Deducting maintenance and depreciation charges of \$169,890, the net earnings were \$975,619. As compared with the previous year the following showing is made:

	1908.	1907.
Net earnings.....	\$975,619	\$2,320,136
Less interest on Latrobe bonds.....	209,692	216,632
Balance.....	\$765,927	\$2,103,504
Preferred dividends.....	944,986	944,984
Deficit.....	\$179,059	*\$1,158,520
Previous surplus.....	2,854,995	2,236,465
Total surplus.....	\$2,675,936	\$3,394,984
Common dividends.....	404,994	539,990
P. and L. surplus.....	\$2,270,942	\$2,854,994

* Surplus.

It will be seen that the 1908 dividends on the common stock and part of those on the preferred were paid out of the surplus. The balance sheet, as of December 31, compares with the previous year as follows:

	Assets.	Changes.
Plants, properties, &c.	\$30,535,811 Inc.	\$245,173
Merchandise on hand.....	1,914,250 Dec.	427,090
Stocks, bonds, &c.	217,225 Inc.	31,816
Accounts receivable.....	1,211,790 Dec.	1,137,031
Other items.....	75,473 Dec.	8,659
Cash	343,878 Inc.	79,820
Totals.....	\$34,298,427 Dec.	\$1,215,972
	Liabilities.	
Preferred stock.....	\$13,500,000	.....
Common stock.....	13,500,000	.....
Latrobe plant bonds.....	4,083,000 Dec.	\$140,000
Accounts payable.....	588,001 Dec.	850,914
Bills payable.....	200,000 Inc.	150,000
Reserve for preferred dividend, taxes, &c.	156,484 Inc.	8,905
Surplus	2,270,942 Dec.	584,053
Totals.....	\$34,298,427 Dec.	\$1,215,972

President William H. Silverthorn, in his remarks to the stockholders, says: "During the year there have been added to the capital account for additions to plants and properties the sum of \$245,173. The improvements and additions that have been under construction at the Latrobe plant are now completed. The provisions in regard to sinking fund payment provided for in the mortgage given to secure the Latrobe plant 5 per cent. bonds were complied with, and the trustees of the sinking fund redeemed and canceled these bonds to the extent of \$140,000 par value, leaving \$4,083,000 outstanding. In common with other manufacturing industries, the company suffered during the past fiscal year a material reduction in volume of business. All of the plants have, however, been maintained at a high degree of efficiency, and the organization has been kept intact. When trade resumes normal conditions the company will be in condition to handle efficiently the large amount of business which it is believed will be offered."

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The Detroit Steel Products Company to Enlarge.—Following an increase of capital stock from \$300,000 to \$500,000, the Detroit Steel Products Company, Detroit, Mich., will soon begin the construction of a large addition to its manufacturing plant. It was only recently that the company completed its extensive works on a site of 20 acres within the city limits for the manufacture of motor car springs, drop forgings, Harvey friction draft gear and wrought steel Detroit Fenestra sash. The latter specialty is a recent acquisition, and has proved so successful that it has become necessary to provide increased capacity for its manufacture. It is for the accommodation of this department that the new addition is to be built. It will consist of a building of 100 x 330 ft., fireproof throughout, including the steel sash.

The Production of Spelter in 1908.

Additional reports received by the United States Geological Survey on the production of spelter show that the preliminary statement issued by C. E. Liebenthal, and published in *The Iron Age* of January 7, was substantially correct. The revised report gives the following figures:

	1908. Net tons.	1907. Net tons.	Dec. Per ct.
Production of primary spelter in the United States.....	210,424	249,860	15.8
Consumption of primary spelter in the United States.....	215,401	228,500	5.7
Production of spelter in the world.....	799,644	813,842	1.7

The production of primary spelter in the United States in 1907 and 1908, apportioned according to locality in which smelted, is given in the following table:

	1908. Net tons.	1907. Net tons.
Eastern, Southern and Western States.....	35,817	42,929
Illinois	50,244	56,056
Kansas	99,298	134,108
Missouri	10,201	11,732
Oklahoma	14,864	5,035
Totals.....	210,424	249,860

The above figures are based on confidential reports by each zinc smelting company in the United States. The world's production, according to the annual statement by Henry R. Merton & Co., London, was as follows:

	1908. Net tons.	1907. Net tons.
Australia	1,198	1,098
Austria and Italy.....	15,680	12,522
Belgium	181,910	170,307
France and Spain.....	61,533	61,438
Germany—		
Rhine District.....	80,896	77,459
Silesia	158,379	152,611
Great Britain.....	60,049	61,286
Holland	19,023	16,526
Poland	10,752	10,735
United States.....	210,424	249,860
Totals.....	799,644	813,842

The Taft View of the Injunction Question.

It is refreshing to find President Taft expressing himself in vigorous and wholesale fashion on the use of the injunction in labor troubles. The following extracts are taken from his inaugural address:

"Another labor question has arisen which has awakened the most excited discussion. That is in respect to the power of the Federal courts to issue injunctions in industrial disputes. As to that, my convictions are fixed. Take away from courts, if it could be taken away, the power to issue injunctions in labor disputes, and it would create a privileged class among the laborers and save the lawless among their number from a most needful remedy available to all men for the protection of their business against lawless invasion. The proposition that business is not a property or pecuniary right which can be protected by equitable injunction is utterly without foundation in precedent or reason. The proposition is usually linked with one to make the secondary boycott lawful. Such a proposition is at variance with the American instinct, and will find no support in my judgment when submitted to the American people. The secondary boycott is an instrument of tyranny, and ought not to be made legitimate.

"The issuing of a temporary restraining order without notice has in several instances been abused by its inconsiderate exercise, and to remedy this the platform upon which I was elected recommends the formulation in a statute of the conditions under which such a temporary restraining order ought to issue. A statute can and ought to be framed to embody the best modern practice, and can bring the subject so closely to the attention of the court as to make abuses of the process unlikely in the future. American people, if I understand them, insist that the authority of the courts shall be sustained and are opposed to any change in the procedure by which the powers of a court may be weakened, and the fearless and effective administration of justice be interfered with."

The Machinery Trade.

NEW YORK, March 10, 1909.

The announcement by the New York Central Railroad that it is to spend \$8,000,000 this year for new equipment was encouraging to the machinery trade the past week. While this large sum is to be spent for cars, locomotives, &c., it is hoped that the purchase of some machine tools will be included. The distribution of such an amount of money among manufacturers is bound to ultimately affect the machine tool industry favorably, especially as some of the companies, the leading locomotive interests which are contemplating extensive building operations and purchases of mechanical equipment, will receive important orders. The announcement was widely discussed by merchants, especially as to its influence in general business. As the railroads have purchased little in the way of mechanical equipment the past year their needs must be considerable. It is hoped that this action on the part of the New York Central will lead other systems to abandon their policy of retrenchment, and come into the market more freely: in fact, in some quarters, it is looked upon as the beginning of a general buying movement among the roads. For machine tools no large inquiries were reported the past week, and practically no change in the volume of business transacted was noted. It is stated, however, that buyers of single tools and small lots are showing less hesitancy in placing orders. Second-hand machinery is moving fairly well, and a sizable order has been placed in this market by a Western implement manufacturer. Complaint is again heard about collections, which are said to be none too good.

Prices, catalogues and other data on machine shop tools, forge tools, modern foundry equipment, steel, concrete building work, &c., are desired by the Vulcan Iron Works, Seattle, Wash., with the view of purchasing the necessary equipment for the new plant it is to erect for the manufacture of mining machinery, engines, mill, mining and marine supplies, &c. The company has purchased a site in Seattle, centrally located, with a frontage of 540 ft. on Fourth avenue, south, and 270 ft. on Connecticut street, which is now being filled in, and as quickly as the ground is leveled, which will be in about six weeks, construction work will be begun on a modern plant, which will consist of the following concrete, steel and brick buildings: Foundry, 106 x 150 ft.; machine shop, 90 x 150 ft.; forge shop, 60 x 150 ft.; pipe and threading shop, 60 x 60 ft.; pattern shop and lofts, 60 x 100 ft., and structural shop, 76 x 150 ft. There will also be a supply and jobbing house, 100 x 270 ft., seven stories high, and a stable, 40 x 80 ft. The plant will be served by 500 ft. of side track from four different transcontinental lines, and will be fully equipped with modern machinery, including cranes, pneumatic tools, &c., all of which will be electrically driven. H. P. Strickland is secretary and treasurer.

It is said in the street that purchases of machine tools will likely be made shortly by the Delaware & Hudson Railroad. This road secured catalogues and other literature pertaining to machine tools in the early part of the year, it being generally understood that the data was being collected for the purpose of preparing a list to be sent to the trade for bids. It is thought now that a list covering the entire requirements will not be submitted, but that the officials will make selections from the catalogues now on file. The machinery is required for the Green Island shops, near Troy, N. Y.

The American Locomotive Company has been doing some buying in this territory during the last few weeks. As was stated in this market some time ago the company has been adding to its motor car manufacturing equipment, but some of the purchasing now being made, it is understood, is for its other plants. The buying is not extensive enough to indicate that the company is carrying out its scheme for constructing a new plant at Gary, and from all accounts no list has been prepared as yet for that enterprise. The machinery which is now being purchased is probably for installation in the company's various shops.

The New York Edison Company is doing some buying which includes some large machine tools, it is understood. This list is not an extensive one, and it is not thought that the buying is being done for the company's proposed new power station, but for some of its existing repair departments.

The Hartford Auto Parts Company, Asa Cook Building, Hartford, Conn., has been buying some equipment in this territory for the manufacture of auto parts, to be installed in a new addition to its plant. The buying has not been completed as yet, it is understood, and other purchases are expected shortly.

The Bristol Engineering Corporation, Bristol, Conn., has been buying some machinery in this market of late, and it is understood that it will shortly purchase considerable other equipment. The company proposes to erect some new buildings to afford additional manufacturing space, and it now has a contract to furnish 300 Haupt motor cars in addition

to a large contract which it will fill for other taxicab interests. I. F. Byrne is the purchasing agent for the company.

The H. J. Reusch Machine Company, 22 Green street, Newark, N. J., manufacturer of jewelers' machinery, is preparing plans for a new plant to be erected shortly, and it is thought that it will come into the market for some equipment as its present manufacturing facilities will be inadequate for the additional manufacturing space it will have.

The York Carriage Company, York, Pa., will likely purchase considerable new machinery for equipping a new building for the manufacture of commercial power vehicles, but it has not yet decided just what machines it will buy. Despite the fact that the company's plant is running overtime on orders for carriages, it has closed a contract for the erection of a new building which will be used exclusively for the manufacture of power vehicles. It will be 50 x 200 ft., and two stories, and will be built so that additional stories can be added in the future. It is expected that the building will be ready for occupancy May 1.

At the meeting of the Public Service Commission to consider the application of the Hudson & Manhattan Railroad for the extension of its subway from West Thirty-third street to a point near Forty-second street and Lexington avenue, it developed that the Interborough Metropolitan Company has in view the construction of additional subways at a cost of \$50,000,000. President Shonts announced that the company was prepared to go ahead with the work, and that plans would be submitted to the commission within the next week or two, for the building of subways. He stated that the new routes will be sufficient to take care of the city's growth for the next 10 years. The construction of subways necessitates the purchase of a great deal of mechanical equipment, and the undertaking now under consideration will be of considerable benefit to the trade as soon as plans are completed. New subway work has been held up because of the city's finances, but it is understood that the construction to be undertaken by the Interborough Metropolitan Company will necessitate but a small expenditure on the part of the city. In this connection, it is of interest to note that the Municipal Commission of Newark, N. J., has approved a bill providing for the building of a subway in that city to relieve traffic conditions. It provides for the expenditure of not more than \$2,000,000 in the construction of the subway, which is to be operated by a railroad under lease.

The court decision that the Lane dock law is constitutional, it is thought, will assure the building of a ship canal to Newark, N. J., and the establishment of public docks there. It is understood that the city of Newark will spend \$50,000 to take up its options on meadow land, and that it will now go ahead with the construction of the docks, which will be located along Newark Bay, near where the ship canal will open into that body of water. Within the past few years several companies have taken advantage of the railroad and water facilities of the meadows in that section and erected new plants, and at the completion of this new project it is likely that other new plants will be located there.

The Superintendent of Public Works, Albany, N. Y., is asking bids for additional work on the Erie Canal, including contract No. 29, covering work in the Mohawk River, from the Oneida-Herkimer County line eastward a distance of 4 miles; 32, construction of lock gates, valves, &c., on the Champlain Canal, and 36, winches for moveable dams already under contract on the Mohawk River, and a dam in the Genesee River, at Rochester, N. Y.

The Board of Water Supply, New York, is asking bids for additional work on the Catskill aqueduct, covering contracts Nos. 16 and 25. Bids will be received until March 25 for the construction of the 2½ miles of plain concrete aqueduct, 17 x 17½ ft., between New Hurley and a point about 2 miles east of the Wallkill, in Shawangunk, Ulster County, about 13 miles from Poughkeepsie. The bids for contract 25 are to be opened March 30, and are for the construction of the Croton and Chadeayne tunnels, Kitchwan and Millward North cut-and-cover and a portion of the Croton cut-and-cover in the Croton division of the Catskill aqueduct in Yorktown and New Castle, Westchester County, N. Y. The tunnels are to be 3000 and 700 ft. long, respectively, 17 ft. high, and about 13 ft. wide. The portions of the cut-and-cover aqueduct are to be plain concrete, 17 ft. high, 17½ ft. wide, and about 13,200 ft. long.

Cleveland Machinery Market.

CLEVELAND, OHIO, March 9, 1909.

Taken as a whole there is little change in the general condition of the machinery market. While some local machinery houses report a slight improvement in orders and inquiries, with others business is as quiet as it has been at any time since the first of the year. The opinion is generally expressed by manufacturers that the recent cut in steel prices will eventually result in an improvement in business, but a stimulating effect is not yet apparent, and the improvement

is not looked for until the steel market becomes settled. Sales during the past week have been mostly single tools, and no inquiries of importance have developed. With the exception of an occasional order for one or two tools very little business is coming from the large manufacturing plants. A large share of orders are from garages and other industries allied with the automobile trade.

A canvass of the industrial situation in this city indicates little change in the situation during the past three or four months. The most important exception is in the case of manufacturers of handling and other heavy machinery, who have considerable more work on hand than they did three months ago. Local builders of machine tools are operating their plants on about 60 per cent. of their full capacity. Companies that operate machine shops and foundries in connection report business as still very dull. Automobile manufacturers are running their plants at full capacity, and the same is true of plants making automobile parts. The latter have a large amount of work on hand, and will probably have all they can do until well along in the summer. Not much improvement in the demand for machine tools is expected from manufacturing plants outside of the automobile trade until these plants become busier than they are at present. The outlook is better for a demand for machine tools to equip new plants. A number of concerns have been incorporated recently to engage in manufacturing in metal working lines, and as the projects get a little further along these new companies are expected to come into the market for some machinery equipment.

The Metal Blanks Company, Cleveland, has been incorporated with a capitalization of \$15,000 to make metal blanks for stampings. H. M. Snider and others are to be associated with the new company.

The Thornburg Mfg. Company, Bowling Green, Ohio, has been incorporated with a capitalization of \$250,000 to manufacture farming machinery. The incorporators are J. J. Thornburg, James G. Hickox, Charles A. Thornburg, Rathbun Fuller and Charles R. Cunningham.

The American Hoisting Machinery Company, Sidney, Ohio, has been incorporated with a capitalization of \$10,000 by C. J. Spilman, George Kraft, M. Hertzstam, G. W. Henne and P. B. Taylor.

The Erie Wheel Company, Cleveland, has been incorporated with a capitalization of \$25,000 by G. H. Kelly, M. G. McAleenan, N. Z. Webster, John Watson, Jr., and J. C. Rexroth.

The Ohio Electric Carriage Company, Toledo, Ohio, has been incorporated by H. P. Dodge, J. B. Bell, R. R. Lee, F. H. Dodge and H. E. Marvin, to manufacture electric automobiles.

The Sheer Bros.' Fence & Iron Company, Cleveland, has increased its capital stock from \$10,000 to \$25,000.

The Loomis Brass Foundry Company, Akron, Ohio, has been incorporated with a capitalization of \$10,000 by M. E. Morris, W. R. Price, John M. Rowley, J. P. Loomis, and N. E. Thomas.

Philadelphia Machinery Market.

PHILADELPHIA, Pa., March 9, 1909.

While manufacturers and dealers talk hopefully regarding the future, immediate business is almost at a standstill, and no one is willing to commit himself as to the probable time that a real resumption in buying will take place. The whole trade is considerably upset by the unsatisfactory conditions prevailing in the iron and steel markets. Reductions in the prices of rolled products will have but little effect on the cost of manufacture of machine tools, but until the situation clears prospective buyers will hold off, and what little business is placed has been largely in the nature of immediate needs to take care of business already in hand. The agitation regarding the reductions in wages in the various iron and steel producing plants has also had a retarding effect on business.

Both merchants and manufacturers report a light demand. Inquiries have decreased materially and cover only minor equipment, mostly single tools. The larger propositions, either already under consideration or in sight, move slowly and nothing of importance has been closed. Some better general railroad work has developed. The Pennsylvania Railroad has let contracts for an elevated structure in this city, which has been held up for some time. The Baldwin Works have taken somewhat better orders for locomotives, and some further car work has been placed by some of the roads, but as far as machine tools are concerned there has been practically nothing done by the roads centering here.

The situation as far as builders of machine tools are concerned is unchanged. In some lines there has been a little more business, particularly for tools of a special character, but orders in no instance have been sufficient to improve working conditions at the various plants to any appreciable extent.

In the second-hand machinery field business continues of an irregular nature. The demand is light and orders are scattered. Dealers' stocks are reported in fair shape, but

business is dull and listless. A moderate volume of business is under consideration in the second-hand engine and boiler field, while a good volume of new work is also being figured on.

Outside of castings required by manufacturers of textile machinery, the iron and steel casting plants report business dull. The steel casting industry is particularly quiet and few of the plants in this territory are averaging over 25 per cent. of their capacity. The gray iron foundries are doing somewhat better, municipal and architectural work having helped this branch of the trade, but there is little tonnage of machinery castings being placed.

Dodge & Day, engineers, are receiving bids for the construction of an electric light and water plant for the town of Berlin, N. J. Both the erection of the building and installation of the equipment are included. A 50-kw. two-phase 2300-volt generator will be installed, while alternate bids on steam or producer and gas engine power are being taken. Specifications may be had from the engineers, 608 Chestnut street, this city, bids being received until March 16. This firm reports a general improvement in business. Construction work, however, shows no important gain, but in special engineering lines a marked betterment is to be noted.

Ballinger & Perrott, engineers, are preparing plans for a five-story reinforced concrete factory building, to be used as a woodworking department for the Victor Talking Machine Company, Camden, N. J. Plans for the building will be ready for estimate in a short time, and after this has been decided the question of equipment will be taken up.

Revised plans are being prepared by Henry L. Reinhold, Jr., for the new pumping station to be built by the South Jersey Realty Company, at Stone Harbor, N. J.

The Raritan Water Company, Metuchen, N. J., has purchased a site for a proposed water works at Runyan, N. J., from which it may arrange to supply water to a number of nearby towns.

The Pennsylvania Railroad Company contemplates important improvements at its Washington avenue terminus at the Delaware River. It proposes to remove its present grain elevator at Washington and Delaware avenues, and erect a modern structure for this work, using extensive conveying systems. The present site of the elevators will, if the improvement is made, be used for piers, which will be extended to the full length.

While there has been no large increase in orders received by the Baldwin Locomotive Works, the officials of the company feel more encouraged with the outlook. There has been quite a fair inquiry from miscellaneous buyers, resulting in a number of orders for single engines; the largest individual order recently was for 25 locomotives for the Chicago, Burlington & Quincy Railroad. There has been no change recently in the working forces at the company's plants and none is contemplated unless there is a decided improvement in business. The Baldwin Works has just about completed the shipment of 16 engines, mostly of a heavy type, for the Central Railroad of Brazil, and is making deliveries against its orders for 31 for the St. Louis & Southwestern and nine for the Western Maryland.

New England Machinery Market.

BOSTON, MASS., March 9, 1909.

While the machinery dealers have found little, if any, change in the market, as it affects their sales, some of the machine tool builders report a slight improvement, orders from widely diversified industries having been booked since March opened. However, the movement upward is not pronounced. It is interesting to note that one of the Western machine tool builders has announced an advance in the price of some of his machines. All signs of price cutting among members of the National Machine Tool Builders' Association have disappeared, the meeting at New York last week having served to stiffen the market, and it is believed that this will be a permanent condition.

The Boston steel market shows no change. The general opinion among the dealers is that the new level of prices is as low as will be reached, unless some unforeseen circumstance arises to alter present conditions, or the tariff is cut so radically as to bring about permanent new basis of selling. No increase in the volume of buying has been noted, customers showing symptoms of waiting for still other reductions, in which hope the dealers believe they will be disappointed.

The announcement of the United Shoe Machinery Company, Beverly, Mass., that its shops have gone on full time, an increase of one hour a day, is received with pleasure. The company is a large buyer of machinery and supplies. It has recently placed some very good orders for machinery, and will doubtless continue to add to its equipment the more rapidly with increase in production. Another circumstance of cheer to the dealers is the item in the Naval Appropriation bill of \$100,000 for new machinery for the torpedo factory at Newport, R. I.

Boston had its fourth loss to stocks of machine tools in a little more than a year by a fire which damaged the build-

ing containing the storehouse of the Niles, Bement, Pond Company, on Atlantic avenue, Monday morning. There was no damage by fire, but the stock was wet down to a considerable extent, which always means a sharp depreciation in selling values. The money damage cannot be ascertained until the insurance has been settled. The same storehouse suffered a severe loss by fire in January, 1908, and since then the stocks of the Chandler & Farquhar Company and Hill, Clarke & Co., Inc., were similarly damaged by water.

The National Scale Company, Beaver Falls, Pa., is moving its works to Chicopee Falls, Mass., where it will occupy the River plant of the J. Stevens Arms & Tool Company.

The Bristol Engineering Company, Bristol, Conn., manufacturer of automobile parts and taxicabs, states it will have no list of requirements in the way of machinery or machine tools until such time as more space is available for manufacturing. The company is planning to occupy the old plant of J. H. Sessions & Son, in addition to its present works.

A company is organizing at Norwich, Conn., to erect a factory on the site formerly occupied by the plant of the William H. Page Boiler Company, which was burned some time ago, and not rebuilt, as the company had erected new works in Pennsylvania. It is understood that the building will be rented for industrial purposes.

A syndicate has purchased the manufacturing village of Turnersville, at Willimantic, Conn., the sale being made by the Turner estate, M. E. Lincoln, trustee. It is stated that the company will improve and develop the property and utilize it for new industries.

Milwaukee Machinery Market.

MILWAUKEE, WIS., March 9, 1909.

"In my opinion," said F. W. Sivyer, president of the Northwestern Malleable Iron Company, Milwaukee, in a review of trade conditions for the past year, "we are on the eve of a long period of steady, substantial prosperity. It is indicated by the manner in which the return to our normal output is accomplished. The orders we receive daily are for the construction of materials that will enter into improvements of magnitude, such as could not be contemplated under spasmodic conditions." This summary of the situation, which was given out some weeks ago, is finding literal fulfillment here. There are few lines of trade in which substantial progress since the first of the year has not been reported, and in many cases shops are running 9 to 10 hr., with considerable increase in force. Additional stimulus to improved conditions has just been given by the blowing in of one of the two furnaces of the Illinois Steel Company, at Bay View, both of which have been down for 15 months or more, and there is every indication that the mills will soon be operating to their capacity. The great engine building works, at West Allis, also went on full time again this week, and business for February is officially stated to have increased 75 per cent. over last year. The electrical works are particularly busy.

A new station for the accommodation of 300 cars will be erected in the near future by the local street railroad company. It is to include steel repair pits and suitable tools for working on any part of the truck or body needing attention, but no details of the equipment have been authoritatively stated.

The Pressed Steel Tank Company, West Allis, Wis., is making a specialty at present of seamless steel barrels. The extension to its plant has nearly been completed.

President Underwood of the Erie Railroad is reported to be interested in a hydro-electric project, for which surveys have recently been made at Cornell on the Chippewa River.

It is stated that the long contemplated additions to the repair shops and terminal facilities of the Chicago & Northwestern Railway, at North Fond du Lac, Wis., will be made some time this year.

The Felker Mfg. Company, Marshfield, Wis., announces that it will erect a new plant, and additional equipment will probably be needed.

The Columbia Silica Company is to build a steel and concrete factory at Pacific, a suburb of Portage, Wis.

The Owen Thomas Motor Car Company is reported to have determined upon the erection of a new plant, at Janesville, Wis.

The Indiana Steel Company has ordered from the Allis-Chalmers Company an electrically operated centrifugal pump of 25,000,000 gal. capacity per 24 hr.

The Wisconsin Engine Company, Corliss, Wis., has completed a 20,000,000-gal. pumping engine for the city of Atlanta.

The Pierce Engine Company, Racine, Wis., is reported to contemplate enlarging its works at Lakeside.

Electric storage batteries will be manufactured at Sparta, Wis., by a new concern known as the Sparta Battery Company.

The Co-operative Coal Docks, at Ashland, Wis., will be taken over by a reorganized company and equipped with the best modern machinery.

Since January 1 a number of good contracts have been taken by the Northern Water Softener Company, Madison, Wis.

An industry believed to be practically unique in its character is that of the Stroh Die Molded Casting Company, Milwaukee, the details of which are carefully guarded. With the process used, intricate parts such as those put on cash registers, slot machines, &c., are molded in very much the same way that type is cast on a monotype machine.

Among the concerns that are coming to the front here in the structural steel line is the Hackendal & Schmidt Company, whose plant on St. Paul avenue will probably be enlarged this year.

The addition to the plant of the Chain Belt Company, Milwaukee, is being put in shape for the manufacture of concrete mixers, which have been taken out of the older works and will be built in the new shop exclusively.

The city of Oconomowoc, Wis., has bought two 100-kw. Curtis' turbines for the new municipal lighting plant. Some auxiliary apparatus will be required.

The order recently taken from the Third Avenue Railroad of New York for 200 Christensen air brake equipments will probably be increased to 300, and that company is also in the market for 100 motor and controller equipments.

A municipal electric lighting plant is projected for Duluth, and a bill authorizing it has been presented by the Common Council to the State Legislature.

The Johnson Service Company, Milwaukee, is finding a large sale for its new, compact type of industrial automobiles.

Cincinnati Machinery Market.

CINCINNATI, OHIO, March 9, 1909.

While there are varying opinions as to what the immediate future holds for the tool builders, there is scarcely a dissenting voice on the present situation. March has opened with little or no business, and none from the dealers. A general complaint from the larger tool manufacturers is that pending deals are seemingly impossible to close. A cheerful note, however, in the present situation is furnished in the assurances of some business from the railroad shops, the increasing interest shown in steel and kindred stocks through the inauguration of the open market, which tends to increase operation at shops utilizing such products, and the generally bare condition of machinery dealers' sales floors.

A small list of machines will be issued in a few days by the Baltimore & Southwestern Railroad, amounting to about \$12,000 or \$15,000. It will include three 18-in. engine lathes, two 16-in. motor driven lathes, one large axle lathe, one wood boring machine, one cut-off saw, one drill press 32 in., two 24-in. back geared shapers and two air compressors of 350 and 375 cu. ft. capacity, respectively, to be installed—one in the Storrs, Cincinnati, engine house, and the other in the shops at Flora, Ill.

Cincinnati manufacturers profited largely through the placing of contracts late in February of tools for the St. Louis & San Francisco Railroad shops. This list was out late in 1907, but was held up during 1908. It was worth approximately \$50,000. The greater part of the lathe requirements were furnished by Cincinnati concerns. The business was secured by Manning, Maxwell & Moore, Marshall & Huschart Machinery Company and the Niles Tool Works.

Another pleasing index to better future conditions is shown by the trade of the pulley manufacturers. The manufacturers of pulleys regard their business as a most direct index to conditions in the tool making industry; when the trade is ordering pulleys they argue that the tool concerns are shipping or preparing to ship machines. At the Standard Pulley Company business has been quite satisfactory of late, according to President J. F. Jewett, Jr., who reports the equipment of the new mill recently erected by the largest special paper manufacturing interest with Standard pulleys and a good run of smaller business from all over. An order worth approximately \$1500 will soon be let by the International Steam Pump Company for equipment of the Cincinnati plant of that company with pulleys. These are to be all of the larger type.

The Steptoe Shaper Company has recently shipped a 16-in. back geared shaper to Montreal.

L. P. Hazen & Co., of this city, will soon begin the building of a five-story combination power house and storage warehouse on recently acquired property. The estimated cost is \$125,000. The structure will be 100 x 200 ft., of concrete.

A recent action of the Board of Directors of the Cannah Stamping & Enameling Company, Canton, Ohio, changes the name to the Canton Stamping & Enameling Company. The change was made in order to better advertise the city of Canton, and because of the possibility of rival concerns taking the title. The Canton Stamping & Enameling Company is the oldest institution of its kind in the city.

A new manufacturing concern is the Phinney Engineering Company, Chillicothe, Ohio, recently incorporated to manufacture and deal in all kinds of machinery. The company will place on the market the bean snipper, patented by William B. Phinney, who comes from Westville, N. Y., where he was formerly engaged in the canning business. The machines will be put out on royalty, as is the custom with other products of the same character.

Darnold & Schweitzer, Newark, Ohio, have secured the contract for the building of a \$50,000 fireproof structure of steel construction in Wheeling, W. Va.

Jobbing foundries are running along at about the same point as the latter part of 1908, three heats a week of from 8 to 15 tons per day, and the prospects for an improvement do not look very bright, save to those establishments where castings are made for special machinery. A local melter who makes the castings for one of the largest manufacturers of ice machines here has had a fine run of business since the first of the year, which shows no diminution as has the general run of business in tools. A few foundrymen have received orders from builders of tools for bases, columns, &c., for machines for the stock floor, and these have no cause for complaint, but as stated the majority of melters complain of the tardy promised improvement following the election.

A new supply company for Columbus, Ohio, is the Holder & Latham Supply Company, which has offices in the McCune Building, that city. A complete line of contractors' and manufacturers' supplies will be handled. The organizers of the company are S. O. Holder and Alva Latham, who were formerly manager and salesman, respectively, for Columbus Buckeye Tool & Supply Company.

Government Purchases.

WASHINGTON, D. C., March 9, 1909.

Bids will be received until March 16 at the Depot Quartermaster's office, New York, for boilers, refrigerating plant, &c., for Manila, P. I.

The following bids were opened March 2 for machinery for the navy yards:

Class 11, seven automatic motor hoists—Bidder 21, Chicago Pneumatic Tool Company, New York, \$1630; 31, Detroit Hoist & Machine Company, Detroit, Mich., \$1410; 64, Ingersoll-Rand Company, New York, \$1655.

Class 31, eight pneumatic drills—Bidder 14, Cleveland Pneumatic Tool Company, Cleveland, Ohio, \$30; 21, Chicago Pneumatic Tool Company, New York, \$52 and \$50; 44, R. H. Grey, San Francisco, Cal., \$80; 63, Independent Pneumatic Tool Company, Chicago, Ill., \$43; 64, Ingersoll-Rand Company, New York, \$45 and \$44.25.

Class 51, one dust collecting system—Bidder 1, Allington & Curtis Mfg. Company, Saginaw, Mich., \$1500; 123, Vermilye & Power, New York, \$1570; 150, Stirling Blower & Pipe Mfg. Company, New York, \$980.

Class 112, one valve reseating machine—Bidder 32, Drew Machinery Agency, Manchester N. H., \$325; 42, Frevert Machinery Company, New York, \$325; 49, R. W. Geldart, New York, \$325; 66, Knox & Bro., New York, \$325; 72, Manning, Maxwell & Moore, New York, \$325; 73, Motley, Green & Co., New York, \$325; 78, Manhattan Supply Company, New York, \$325; 82, Montgomery & Co., New York, \$325; 88, Neville & Grubb, Portsmouth, Va., \$325; 106, R. B. Sherman, New York, \$325; 116, Tucker Tool & Machine Company, New York, \$325; 123, Vermilye & Power, New York, \$325; 129, White, Van Glaan & Co., New York, \$325; 135, Berry & Aiken, Philadelphia, Pa., \$325; 136, Central Metal & Supply Company, Baltimore, Md., \$325; 140, Excelsior Equipment Company, Pittsburgh, Pa., \$325; 149, Rawles-Cobb Company, Boston, Mass., \$325.

The following awards have been made for machinery for the navy yards, bids for which were opened October 27:

Sirocco Engineering Company, Troy, N. Y., class 152, three portable electric blowers, \$180.

Frevert Machinery Company, New York, class 154, one combination tool grinding and sharpening machine, \$70.

Manning, Maxwell & Moore, New York, class 162, one independent dovetailer and variety shaper, \$255.

Knox & Bro., New York, class 163, one power wiring machine, \$83.30.

Prentiss Tool & Supply Company, New York, class 165, one No. 3 Improved drilling and tapping machine, \$1535.

Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, class 169, one improved core machine, \$254.

Walter A. Zelnecker Supply Company, St. Louis, Mo., class 170, one automatic circular grinding machine, \$175.

Loy & Nawrath Company, Newark, N. J., class 171, one motor driven power press, \$1943.

The following awards have been made for machinery for the navy yards, bids for which were opened January 5:

Fairbanks Company, New York, class 2, one quick change engine lathe, \$1229.

Niles-Bement-Pond Company, New York, class 3, one back geared engine lathe, \$1250.

I. H. Johnson, Jr., Company, Philadelphia, Pa., class 4, one heavy geared head engine lathe, \$7020.

Under bids opened February 11, Circular No. 493, for machinery for the Isthmian Canal Commission, the Lincoln Electric Company, Cleveland, Ohio, has been awarded, class 2, four induction motors, \$2820.

Under bids opened February 16 for machinery for the navy yards, the Sprague Electric Company, New York, has been awarded, class 19, five motors, \$1728.

Under bids opened February 23, for machinery for the navy yards, the Jones & Lamson Machine Company, Springfield, Vt., has been awarded, class 2, one flat turret lathe, \$1700.

Trade Publications.

Shapers.—Gould & Eberhardt, Newark, N. J. Catalogue, 6 x 9 in., 50 pages. The company's high duty shapers (14, 16, 20 and 24 in.) and their attachments are shown. The range of cutting stroke per minute of each machine is in practically geometrical progression; those of the largest machines are from 6 to 100 strokes per minute, and of the smallest 10 to 130 strokes per minute. One illustration shows some especially large steel chips taken on a 24-in. shaper; other illustrations indicate what the machines have done in the way of accurate and rapid work. Attention is called to the double train gear drive applied to these machines, which permits working high speed tools to the limit—i.e., at a high speed without increasing the speed of the other gears in the train. The machine is shown assembled and in sections, and the attachments, which include high duty vises, high duty jaw vises, index centers, circular table attachments, special tilting base for shaper vises, swiveling tables, rack cutting and milling attachments, &c. Machines are illustrated with variable speed and constant speed motor drives for direct or alternating current. An interesting chapter on the shaper as a manufacturing tool is included, and some of the things it can do are illustrated and described.

Sugar, Coffee, Rice and Fiber Machinery.—George L. Squire Mfg. Company, Buffalo, N. Y. Catalogue No. 64 E, 7 x 10 in., 40 pages. Cane mills, pumps, filters, presses, distilling outfits, evaporators, &c., for sugar plantations and refineries are illustrated, together with power plants of various types adaptable for this work. Centrifugal pumps for irrigation, fiber machines, rice hullers and polishers, coffee separators, washers and hullers, &c., are listed, together with blowers and exhausters.

Punches and Shears and Blacksmith Tools.—Buffalo Forge Company, Buffalo, N. Y. Two catalogues. Catalogue 20 B, 7 x 10 in., 24 pages, shows principally punches and shears, angle and tee iron cutters for blacksmith and metal workers' use, as well as portable forges. Several types of hand punches and shears are shown, and a general line of angle and tee iron cutters is illustrated. The book also shows the Buffalo tire up-setters and power punches and shears, and some space is given to the company's line of steel pressure blowers and steel plate planing mill exhaustors. Catalogue 78 B, 7 x 10 in., 40 pages, illustrates a general line of blacksmith tools, such as hand forges, electric forges, shears and punches, blowers, both hand and power operated, tuyere irons and drills especially designed for blacksmith use, &c.

Concrete Reinforcement.—General Fireproofing Company, Youngstown, Ohio. Circular. Shows the Herringbone trussed bar, which consists of a main tension resisting member to which stirrups are attached. It is shipped entirely assembled, the only work required for its use being the bending of the stirrups up to the proper angle. The company's square lug bar, which is made in sizes up to 1 1/4 in., is also shown.

Concrete Tile Machinery.—Concrete Stone & Sand Company, Youngstown, Ohio. Catalogue, 7 1/2 x 10 1/2 in., 20 pages. Structural tile in many patterns and for practical structural purposes is shown by line drawings, giving dimensions, and prices are listed. Illustrations of buildings on which structural tile has been used are included, and some interesting text pertains to the cost of various cottages and larger residences. Results of tests of the company's tiling are included.

Portable Cranes and Hoists.—William S. Nicholls, 253 Broadway, New York. Circular. Shows new types of the Hercules portable cranes and hoists. The company's standard machine, which has been described before, is a movable hoist with wheels on roller bearings. It can be operated by one man, and is made in sizes from 5000 to 7000 lb. capacity. A low down hoist is shown which can be used to move machinery, &c., in places where the ceiling or shafting would interfere with a hoist of great height. This machine is 8 ft. over all and the standard hoist has a capacity of 6000 lb. The company has also brought out a chain block attachment for its standard hoist which can be easily removed and used for other purposes. These machines are shown supporting automobiles, castings, small machine tools, &c.

Flat-Steel Grinding Machines.—Waltham Machine Company, Waltham, Mass. Folder. Shows a flat-steel grinding machine weighing 365 lb., a feature of which is that every part of the equipment is above the bench and easy of access. It has a smooth running gear drive belted direct to the line shaft by tight and loose pulleys on a horizontal shaft. Another feature is the work driving fixture with which four pieces may be ground simultaneously and with uniform pressure.

Engine Type Direct Current Generators.—Crockery-Wheeler Company, Ampere, N. J. Bulletin 110, 15 pages. Contains a list of engine type direct current generators sold by the company.

Blocks and Sheaves.—W. W. Patterson Company, 54 Water street, Pittsburgh, Pa. Catalogue, 4 1/2 x 7 in., 36 pages. Illustrates wood and steel blocks of various types, chains and cables, sheaves, beam clamps, ratchets and bushings, and some testimonials from users are included.

HARDWARE

A VERY important and radical decision in what is known as the Spokane case was rendered last week by the Interstate Commerce Commission, under the authority to fix rates which is given it by the Hepburn law, particulars being given on a subsequent page. The effect of this decision is to make substantial reductions in the rates which the transcontinental roads charge from Chicago and St. Paul to Spokane, not only in all class rates, but also on more than 30 commodities, most of which are in the line of Hardware and related products. The remarkable feature of this decision is that it calls into question the reasonableness of practically all the rates of transcontinental railroads, not only to Spokane, Salt Lake City and other interior points, but to Pacific Coast termini as well. Existing rates to Denver and Colorado points might be challenged on the same ground, so that this decision affects the established structure of rates over an area comprising about half the United States. There were two grounds of complaint offered by Spokane—that the rates to that city were higher than to Seattle and other more distant points, and that the rates to Spokane were inherently unreasonable. The commission evaded the question raised under the long and short haul clause of the interstate commerce law and simply held that the Spokane rates were unreasonable. By the same line of reasoning practically all the rates charged by transcontinental roads would appear to be "unreasonable."

The long and short haul clause of the law contains an exception, which was put in the law originally to favor the transcontinental lines. These roads claimed the right to charge higher rates to interior points than they made to the coast, where they had to meet water competition. At the time the law was enacted in 1887 they had difficulty in earning expenses and interest on their bonds, owing to the undeveloped condition of the country they traversed, and during the past 20 years they have charged rates to interior points that were 50 to 100 per cent. higher than their tariffs to the coast. In the western part of their territory they have usually charged the rate to the coast, plus the local rate back, on shipments from the East. The business men of Spokane have been paying, they claim, the highest rates charged to any important "intermountain" city, and they have been fighting strenuously for 17 years to get lower rates. When the Hepburn law was enacted, giving the Interstate Commerce Commission power to revise rates, they filed formal complaints, which have been pending every since until this decision. It has been understood that the commission was hopelessly divided on the question, and the present unanimous decision has come as a surprise to those who were familiar with the case.

The decision that the Spokane rates are unreasonable is founded upon a conclusion of the commission that the earnings of the Great Northern and the Northern Pacific railroads in recent years "have been excessive." In arriving at this conclusion the commission has considered a vast amount of evidence, covering the history of the railroads, the cost of reproducing them at the present time, the original cost of construction, the present capitalization, and the manner in which that capitalization has been made. While this is in line with popular ex-

pectations at the time the Hepburn law was enacted, it is the first time the commission has founded a decision on the ground of excessive earnings or profits, and it opens an immense field for litigation over railroad rates. The earnings of the Union Pacific, a road not involved in this case, are certainly relatively as "excessive" as those of the Great Northern or Northern Pacific, and many other great systems would probably be open to attack along the same line. Ever since the interstate commerce law was enacted there has been a general upward tendency in rates, and in recent years there has been a marked increase in the earnings of the railroads, especially since the stringent Elkins law was enacted to stop rebating.

The order of the commission is to become effective May 1, but there may be many years of litigation before the reduced rates actually become available. The railroad interests of the country may be depended upon to exhaust every resource in the way of litigation before accepting a rule that would reverse the tendency of the past 20 years in railroad rates; a rule that might inaugurate a period of rate reduction throughout the country in place of the gradual advances of the past.

Condition of Trade.

There is at least one reason for gratification in regard to the business situation, and that is in the fact that on the whole trade is decidedly better than a year ago. This is unquestionably true, notwithstanding the fact that some jobbing houses refer to business in their sections as very dull, with a sluggish and limited movement. Over against this condition is, however, to be set the fact that other jobbing houses, notably in the West, report that their February business was very satisfactory, in at least one case making a new record for the month. There is thus much inequality in the volume of current business handled by the Jobbers in different parts of the country. Among retail merchants trade varies similarly with locality and special conditions. While the weather may be charged with having had some influence in curtailing trade, February having been in many sections a trying, if not severe, month, the unsettled condition of the market in the raw material has had a good deal to do with holding back trade. The sensational announcements of the daily press in regard to the break in the market for iron and steel have had their repressing effect on practically all commercial transactions, inducing merchants and capitalists to await developments in view of the possibility of a more or less practical reduction in values. The market, however, has up to this time at least refused to go to pieces, and the larger and smaller iron interests are generally pursuing independently a conservative policy which compares well with the course of things before the market was officially declared open. This steadiness is regarded as a remarkable feature of the situation, resulting probably in large measure from an apprehension of what might happen if the ordinary forces of competition were given free play. The limited volume of business, more especially in the raw material, and the heavy products, indicates the feeling of uncertainty which prevails and the undertone of weakness which exists. The reduction in wages an-

nounced here and there is also significant. The Hardware merchants, however, should bear in mind that in Shelf Hardware generally and the finer lines especially a reduction in the price of the raw material has only a slight effect on the cost of the goods, and this is frequently offset by the increased expense of manufacturing when trade is of only moderate volume. While this condition of things rebukes speculative buying, merchants, wholesale and retail, are undoubtedly justified in keeping up their stocks, particularly of the goods which are only remotely affected by low prices in iron, copper and other materials.

NOTES ON PRICES.

Wire Nails.—The Wire Nail market is in substantially the same condition as at our last report, with an improvement in the situation, as the mill referred to is understood to have discontinued quoting irregular prices. The market is thus free from this disturbing influence, and is characterized by very satisfactory maintenance of prices. Some irregularity in jobbers' quotations has also been corrected. This result will be regarded with much satisfaction by merchants, especially those who have considerable stocks on hand, as they are thus given an opportunity to work them off. Notwithstanding the present steadiness of the market in Wire Nails, Barbed Wire, &c., the trade are purchasing with marked conservatism, not knowing how long the existing condition of things will continue, and contemplating the possibility of a change in the situation as a result of the various influences which are in operation in the market. The volume of current business is, however, very satisfactory. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

New York.—Wire Nails are in about the same condition as last week, the movement being moderate though continuous. They are held at the base price of \$2.25 per keg for small lots at store.

Chicago.—The action of the leading manufacturers of Wire products in declining to revise the current schedule of prices at this time seems from numerous expressions received from jobbers to meet the approval of the trade generally. A disturbing element introduced by a cut made by some leading jobbers is reported to have been harmonized by the withdrawal of irregular quotations and a restoration of the ruling schedule. It is stated that despite the rumors of cutting by manufacturers investigation has proved that prices are as regularly maintained as they have been at any time in months past. Each day in the past week has shown a steady increase in the volume of business entered by the leading interest and the prospects for a good spring business are said to be quite encouraging. Quotations are as follows: \$2.18 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—At the close of last week the understanding among leading producers of Wire was that if the shading of a certain interest was not discontinued it would be necessary to make a general reduction in prices of Wire goods. This week a definite statement was made by the interest in question that it had withdrawn all quotations except at regular market prices, and this is regarded as eliminating the disturbing factor and removing all need of a revision in prices. While shipments have not been up to the average in the past fortnight production has been maintained and it is believed that if confidence is restored jobbers will take increased deliveries. Quotations are on the basis of \$1.95 to jobbers in carload lots, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days.

Cut Nails.—The firmness in the price of Wire Nails has a tendency to increase the demand for Cut Nails, and perhaps to cause a slightly closer adherence to regular quotations. The course of the raw material market must, however, be taken into account in this connection. Regular quotations are as follows: Steel Cut Nails, \$1.80, base, per keg, f.o.b. Pittsburgh, for carloads, but this price continues to be shaded from 5 to 10 cents on desirable orders. In the Western markets Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails, but this differential is not observed in the East.

New York.—Requirements continue light, with a consequent moderate demand. In small lots at store, Cut Nails are held on the basis of \$2.05 per keg.

Chicago.—It was hardly expected that in face of the unsettled condition of the iron and steel market there could be any improvement in the demand for Cut Nails. However, the encouraging progress made in the readjustment of prices inspires hopes of a more active market in the near future. The prospects for extensive work in building construction is also a factor favoring future betterment of the Cut Nail trade. Regular quotations are as follows: In car lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

Pittsburgh.—The market has been quiet, owing to uncertainty in the Wire Nail market, but as Wire prices are getting more settled, it is expected Cut Nails will do better. Quotations remain as before, on the basis of \$1.80, f.o.b. Pittsburgh, but this price is sometimes shaded.

Barb Wire.—The uncertainty as to the immediate future of the market on Wire products is said to have caused considerable business in Barb Wire to be held back during the past two or three weeks. The belief is expressed that as the market appears more settled, a marked improvement in demand will be experienced. Regular quotations are on the following basis, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

Chicago.—Since it has become generally understood that no change in Wire prices is contemplated, orders are being placed more freely. The demand for Fencing is extending Northward and some good sized specifications have been received in the past week from Wisconsin, Minnesota and even the Dakotas. Judging from existing conditions in agricultural districts, there is every reason to look for a fair volume of Fencing business for spring shipment. Quotations are as follows: Jobbers, Chicago, *car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Prices are firm on Barb Wire, and it is expected that they will be maintained through the season. A great deal of business has been held back in the past three weeks, and much heavier buying is expected in the near future.

Plain Wire.—Practically the same conditions obtain in the Plain Wire market as in that of Barb Wire. Hopes are expressed that a revival of business will result from a firmer market and the advancing season. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain, and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.	6 to 9	10	11	12 & 12½	13	14	15	16
Annealed....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35
Galvanized....	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95

Chicago.—Within the past week Fence manufacturers have been specifying more liberally, and with the understanding that no change is likely to be made in prices, a restraining influence has disappeared. Contracts covering the estimated spring requirements have already

been largely placed, but if the trade develops as in reason it ought to, they may be over-reached by future demand. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

Pittsburgh.—As noted under Wire Nails, the disturbing factor in the market is believed to have been eliminated, and it is expected that prices will be maintained.

Bolts.—In sympathy with the steel market, a decline of about 5 per cent. has been made by concerted action of leading Bolt manufacturers. The market in this line is now represented in a general way by the following quotations:

	Discount.
Common Carriage Bolts, $\frac{3}{8}$ x 6, smaller and shorter, cut thread	75, 10%
Common Carriage Bolts, $\frac{3}{8}$ x 6, smaller and shorter, rolled thread	75, 10, 5%
Common Carriage Bolts, longer or larger than $\frac{3}{8}$ x 6	70, 10%
Machine Bolts, $\frac{3}{8}$ x 4 or shorter and smaller with H. P. or C. P. Plain Nuts, cut thread	75, 10, 5%
Machine Bolts, $\frac{3}{8}$ x 4, or shorter and smaller, rolled thread	75, 10, 10%
Machine Bolts, with H. P. or C. P. Plain Nuts, larger or longer than $\frac{3}{8}$ x 4	70, 10, 5%
Machine Bolts, all sizes, with C. & T. Nuts	70, 10%
Machine Bolts, up to 6 in. in length without nuts, additional discount	10%
Machine Bolts, above 6 in. in length without nuts, additional discount	5%
Machine Bolt Blanks	70, 10, 5%
Bolt Ends, with H. P. or C. P. Plain Nuts	70, 10, 5%
Bolt Ends, with C. & T. Nuts	70, 10%
G. P. Coach Screws	80, 5%
Cone Point Lag Screws	80, 10%
Forged Set Screws	70, 5%
Tap Bolts	60, 5%

Nuts.—Following the decline in Bolts, prices on Hot Pressed and Cold Punched Nuts were reduced about one-tenth cent by the associated manufacturers. The usual concessions beyond the following regular quotations may be obtained by the larger trade:

NUTS—BLANK OR TAPPED.	
	Cold Pressed.
Square	Off list.
Hexagon	5.40c.
Square, C. T. & R.	6.00c.
Hexagon, C. T. & R.	5.80c.
	Hot Pressed.
Square	Off list.
Hexagon	5.90c.
	6.40c.

Hatchets.—From the somewhat confused situation in the Hatchet market, the level of prices is gradually developing. Fair buyers are able to secure first quality goods at from 50 and 10 to 60 per cent. discount.

Gilt Nails.—Noteworthy firmness is shown by quotations on Furniture Nails. No concessions from established prices are currently reported.

Double Pointed Tacks.—Some improvement is observed in the market for Double Pointed Tacks, quotations showing more uniformity than for many months. The jobbers, however, who have good stocks on hand are in a position to sell at continued low prices. Carpet and Cut Tacks are steady.

Squares.—Quotations on Steel Squares have been stiffened up by leading manufacturers, prices now current ranging about 10 per cent. or more higher than for a long time. The new level of the market may be represented in a general way by a discount of 80 per cent., beyond which further concessions are obtainable by close buyers.

Axes.—Investigation reveals no change in the Axe market since the opening of the contract season. Quotations have held steady, but at a low level, said to represent little profit to producers of average facilities.

Chain.—The Chain market seems to have steadied to some extent. Manufacturers who are in a position to do so are choosing to stock their product rather than meet the prices at which business can be secured. Prevailing quotations to average trade may be represented in a general way as follows: Coll Chain, $\frac{3}{8}$ in., \$3.25 per 100 lb.; German Pattern Chain, 3-0, 70 per cent. discount; Traces and Ties, 70 and 10 per cent. discount.

Rivets.—Boiler and Structural Rivets, recently reduced, may now be quoted in a general way as follows: Boiler Rivets, \$2 per 100 lb.; Structural Rivets, \$1.90

per 100 lb. Timmers' and Miscellaneous Rivets continue to sell at low and irregular prices.

Zinc.—A reduction of 25 cents per 100 lb. has been made in the base price of Sheet Zinc, making the quotation now \$6.75 per 100 lb., f.o.b. cars, in 600-lb. casks, of the thicknesses from Nos. 9 to 19, inclusive, and of the widths from 32 to 56 in., inclusive, and of the lengths from 72 to 96 in., inclusive. The following are the quantity discounts:

	Cash with order.	Quantity.	Total.
Carload lots	3%	5%	8%
9000-lb. lots	3%	3%	6%
6000-lb. lots	3%	2%	5%
3000-lb. lots	3%	1%	4%
Less than 3000 lb.	3%	0%	3%

Wrought Strap and T Hinges and Butts.—Revised discount sheets on Wrought Strap and T Hinges, Butts, &c., announcing the important reductions recently referred to in these columns are now in circulation, together with reduced net price-lists on plated and ball bearing Butts. Printed discounts, beyond which there are extra concessions according to the class of trade, are given below. It should be stated that the print represents a lower price than on former discount sheets, and extras are considerably smaller than heretofore:

	Wrought Steel Butts, Bright.	Discount.
Light Narrow, Light Reversible	75 and 5%	
Reversible and Broad	75 and 10%	
Loose Joint, Narrow, Light Inside Blind, &c.	75%	
Back Flaps, Table, Chest	70%	

	Wrought Steel Butts, Bronzed.	Discount.
Light Narrow, Loose Pln.	55%	
Light, Loose Pin, Ball Tip	65%	
Broad	55%	

Wrought Strap and T-Hinges.

Light Strap	65%
Heavy Strap, Plain and Corrugated	75%
Light T.	60%
Heavy T.:	40 and 10%
Extra Heavy T, Plain and Corrugated	65 and 10%
Hinge Hasps	40%

Shelf Brackets.—Reflecting the recent decline of about 10 per cent. in Wrought Steel Shelf Brackets, a discount of from 80 to 80 and 5 per cent. may be named to represent the market to fair-sized trade.

Rope.—Business continues in about the half-hearted way that has recently characterized the market. Prices on small business remain without quotable change, but on larger orders for Pure Manila Rope, 8 cents, basis, is easily obtainable. General quotations on small quantities of Rope, 7-16 in. in diameter and larger, are as follows: Pure Manila, $\frac{5}{8}$ to $\frac{3}{4}$ cents; Pure Sisal, $\frac{6}{8}$ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, $\frac{1}{4}$ in. and up, No. 1, is $\frac{6}{8}$ to $\frac{7}{8}$ cents, and No. 2, $\frac{5}{8}$ to 6 cents.

Linseed Oil.—New business is confined to demand for small lots covering immediate requirements, and specifications on contract orders have been moderate. Flax seed declined sharply in Duluth on Saturday, without any apparent reason, but has recovered a good portion of the decline, the recovery being equally unexplainable. The fluctuations in Seed prices have had no effect on the Oil market, and values remain unchanged. Quotations, in 5-bbl. lots are as follows: State and Western Raw, 55 cents per gallon; City Raw, 58 cents per gallon. Boiled Oil is 1 cent advance on Raw.

Spirits Turpentine.—There has been a steady decline in price since our report last week. This is attributed to light demand in Savannah, selling tank supplies, and steady receipts of Turpentine. The local market reflects these conditions, the decline in price having made buyers less desirous to come into the market. The New York market is represented by the following quotations: Oil Barrels, $39\frac{1}{2}$ to 40 cents; Machine Made Barrels, 40 to $40\frac{1}{2}$ cents per gallon. This represents a decline of about $2\frac{1}{2}$ cents per gallon during the week. As one of the results of the investigation by the Government of the adulteration of Spirits Turpentine it is said that the percentage of adulteration increases in proportion to the number of hands through which the product passes from the still to the user. The conclusion reached is, that consumers who are in position to buy from first hands will get the purest Turpentine.

Window Glass.—According to reports, the recent additions to working Window Glass factories has brought the output of Glass to a higher point than at any time during the present fire. Most of the hand operated factories are supposed to be working on private wage agreements, and are understood to be meeting the American Window Glass Company's discount of 90 and 30 per cent. for single and 90 and 35 per cent. for double strength Glass, and perhaps doing 2½ per cent. better or even more, according to circumstances. The discounts from jobbers' list of 1903, emanating from Cleveland the latter part of February, of 90 and 40 for single and 90 and 45 per cent. for double strength Glass have been met by some jobbers to secure orders. As showing the instability of the market and the wide range of prices quoted by jobbers two instances may be cited. An Eastern retail merchant was quoted a discount of 90 and 10 per cent. on single and double strength by a jobbing house, and within a day or two had no trouble in placing an order with another jobber at 90 and 25 per cent. for single and 90 and 30 per cent. discount for double. The prospect of the formation of the Imperial Glass Company appears to be growing less, as 10 per cent. of hand production still stands out, and without this 10 per cent. the committee say that the company will not be formed. Daily press reports are to the effect that in the pending tariff revision Plate Glass duties will suffer a severe reduction, and that Window rates will also be materially reduced. At the meeting of the Eastern Jobbers' Window Glass Association, held in Baltimore last week, the following minimum discounts were recommended: In the Metropolitan District, which includes territory within 30 miles of New York, 90 and 30 per cent. on single and 90 and 35 per cent. discount on double strength Glass. Outside the Metropolitan District, which includes all territory east of the Mississippi River, 90 and 35 per cent. on single and 90 and 40 per cent. on double strength Glass.

RETAIL HARDWARE CONVENTIONS.

Alabama Retail Hardware Association.

Active preparations are being made for the third annual convention of the Alabama Retail Hardware Association, L. G. Smith, Ensley, secretary, which is to be held in Birmingham, May 12, 13 and 14. The headquarters will be at the Hotel Hillman, where the different sessions will also be held. The prospects are flattering for a large attendance and a useful convention. Besides talks and specially prepared papers from members of the association, it is expected that several officers of the National Association will be present as well as other visitors, who will discuss practical subjects of interest to Hardware merchants. A good deal of time will be devoted to the Question Box feature.

Arkansas Retail Hardware Association.

The officers of the Arkansas Retail Hardware Association have made arrangements to hold an exhibit of Hardware, Vehicles, Implements, Harness, Stoves and kindred lines in connection with the tenth annual convention, which will be held in Fort Smith, June 22, 23 and 24. Heretofore exhibitors at the meetings have been forced to the unsatisfactory expedient of making displays in the hotel rooms. Every year there have been protests made to the officers of the association relative to the matter, but until this time it has not been feasible to take care of exhibitors in a proper way. The commodious Tabernacle Hall at Fort Smith has been secured, and the secretary of the association, W. L. Harlan, Little Rock, is sending out a diagram of the hall and other data of interest to intending exhibitors. The prices for booths range from \$15 to \$30.

It is expected that there will be an unusually large attendance at this convention on account of the favorable location of Fort Smith, and the fact that many of the Hardware merchants of Oklahoma have expressed their intention of coming to the meeting in response to invitations tendered.

At a meeting of the Executive Committee lately held

it was decided to establish a freight bureau in connection with the association. The purpose of this bureau will be to audit the current freight bills, adjust claims and otherwise look after the traffic affairs for the members of the association exclusively. It is stated that a large number of the merchants of Arkansas are paying from \$25 to \$300 a year for the same service that this freight bureau purposes to furnish. It is also known that a number of merchants are sending their freight bills outside the State for adjustment. It is designed to give the members the benefit of this freight bureau service for 50 per cent. of the amount of claims and overcharges that are adjusted, which amount will go to help in maintaining the association office. Secretary Harlan has had seven years' railroad experience and will devote his entire time to looking after organization matters for the members.

HARDWARE FREIGHTS.

Important Decision in Transcontinental Freights.

A VERY important decision was announced last week at Washington by the Interstate Commerce Commission, materially reducing the freight rates from St. Paul and Chicago to Spokane. A question long pending, and on which there has been in the commission such a marked difference of opinion that up to this time it has been impracticable for them to reach a decision, has thus been determined.

By this decision a reduction of 16 2-3 per cent. has been ordered on all "class" rates from St. Paul to Spokane, and substantially the same reduction from Chicago to Spokane. Drastic reductions are also ordered in the rates which the transcontinental roads charge from Chicago and St. Paul to Spokane on 34 commodities, the majority of which are handled by the Hardware trade, as follows:

	Present rate.	New rate.	Reduction.
Tin Boxes and Lard Pails, n.o.s.	100	90	10
Boxed, crated or jacketed.	100	100	0
Nested in boxes, barrels or crates.	100	100	0
Plow Points.	164	110	54
Shovels, Spades, Scoops, in packages.	164	135	29
Fruit Jars and Glasses.	100	100	0
Beltng, cotton or rubber.	205	120	85
Bicycles, boxed or crated.	335	250	85
Glass, common, window, under 68 in.	138	90	48
Glass, common, window, all sizes, n.o.s.	150	90	60
Paints, dry, in cans (packed in boxes or barrels), or in barrels, casks, kegs, kits, boxes or iron drums.			
Paint, In oil, in cans (packed in boxes or barrels), or in barrels, cases, kegs, kits, boxes or iron drums.	115	90	25
White or Red Lead, dry or in oil, in cans (packed in boxes or barrels), or in barrels, casks, kegs, kits, boxes or iron drums.			
Paper bags, plain or printed.	120	100	20
Saws, circular, &c., on boards or in boxes.	228	150	78
Water Heaters, gas or gasoline, instantaneous.	230	170	60
Stoves and Ranges (cast iron), cooking, &c.	155	130	25
Stoves, Air Tight Heaters (sheet iron).	220	150	70
Glassware, n.o.s.	190	120	70
Rope and Cordage, cotton, hemp, jute, &c., in bales, boxes or barrels.	167	125	42
Wheelbarrows, K.D., flat.	141	90	51
Windmills, K.D.	155	135	20
Wire, copper.	188	110	78
Wire, fencing, in rolls.	150	80	70
Woodenware, in packages.	174	125	49

This decision was rendered on the twofold complaint of Spokane, first that the rates are unreasonable, and second that they are higher than are charged to Seattle. This latter claim was not passed upon by the commission, whose decision is based upon the principle that the charges from the points in question are unreasonable.

In addition to the acknowledged importance of the decision in this special case, it possesses much greater significance from the fact that it opens the door to similar action in connection with the rates in other parts of the country, and especially, though not by any means exclusively in transcontinental business. Some of the bearings of this important decision are discussed editorially in another column.

AN ATTRACTIVE RANGE WINDOW.

JAMES E. VOORHEES, Bushnell, Ill., arranged the display, shown herewith, in his show window, which is 7 x 9 ft. in size. The background was a frame 9 ft. high, covered with wall paper to resemble a room, with oilcloth on the floor. The woman and child were wax figures, dressed to correspond with the surroundings. Loaves of bread with a pan of biscuits in front of them were placed on the drop oven door. These were procured



Range Window Display.

from the baker. The price of the range, \$50, appeared above the high warming closet, while to the left was a large card announcing a 20 per cent. discount on all cooking utensils bought with stoves. The window was attractive because of its completeness and the good taste shown in its arrangement, and caused more favorable comment and proved a better advertisement than any previous window display. But, better still, it resulted in an immediate large increase in the sale of Ranges. The window is changed often, and is considered by the proprietor as his best medium for advertising.

BENJAMIN P. FORBES, the Forbes Chocolate Company, Cleveland, Ohio, is calling special attention to his Glasbrite, a preparation adapted to cleaning windows of plain or ribbed glass, particularly in factories, shops and grinding rooms. It is claimed that windows cleaned with the preparation will keep clean twice as long as when cleaned with water only, as it removes all grease and smoke and leaves a hard, shiny surface to which dirt does not readily adhere. Windows can be cleaned with a damp sponge and a dry cloth, in connection with the preparation, obviating carrying about a pail of water. As the time is approaching when the preparation will be more used than in winter, a circular is about to be widely distributed relating to the goods, showing a number of reproductions of original orders and giving references covering a wide section of territory. Mr. Forbes is especially desirous of mailing free samples to interested purchasing agents.

WILLIAM H. ALLEN, one of the pioneer hardware merchants of Philadelphia, Pa., died at his home in Overbrook, a suburb of that city, on the 2d inst., in the eighty-seventh year of his age. Seventy years ago he started in the hardware business, associated with his brother, at 113-115 Market street, the firm being known as W. H. & G. W. Allen. He retired from active participation in the business five years ago. Mr. Allen was a member of the Hardware Merchants' and Manufacturers' Association of Philadelphia, and was prominently identified with a number of philanthropic enterprises. He leaves a widow and a daughter.

TRADE ITEMS.

ON February 1 there occurred a dissolution of partnership in the Philadelphia Chain Works, manufacturer of Welded Chains, Frankford, Philadelphia, Pa., J. Alan Middleton taking over the interest of George H. Campbell.

THE ICY-HOT BOTTLE COMPANY, 216 Post square, Cincinnati, Ohio, has issued an attractively illustrated booklet showing the Icy-Hot Bottle in practical use for a great number of purposes. The booklet also contains price-list of the Bottle and accessories. This bottle is designed to keep its contents "either ice cold or steaming hot for days."

THE NEW CENTURY HERALD, issued monthly by the Chattanooga Roofing & Foundry Company, Chattanooga, Tenn., is now entering the third year of its existence. The publication is designed especially for builders, contractors, architects and others interested in metal building material. Copies will be sent to any one in this line on application.

THE TURNBULL-SMITH COMPANY, Industrial Building, Syracuse, N. Y., has been incorporated with a capital of \$25,000. The company will manufacture metal specialties. The directors are Arthur H. Turnbull, William H. Smith and George F. Park.

THE corn sheller and grinding mill business at Clarksville, Tenn., founded by the late Asahel H. Patch in 1884, will be continued by his estate. There will be no change in the policy or scope of the business. Benjamin A. Patch, who for more than 15 years has been active in its management, will direct its affairs.

SINCE the close of the annual convention of the New York Retail Hardware Association at Rochester many members have expressed their appreciation of the tireless and unselfish work of Louis J. Ernst of Rochester, who was chairman of the Convention and Exhibit Committees and personally attended to all the arrangements which were so smoothly and successfully carried out. For weeks, Mr. Ernst gave much time to the service of the association, and his wise and efficient work contributed greatly to the success of the convention.

FIRE, of unknown origin, damaged the warerooms and office of the Carver File Company, Philadelphia, Pa., on the 6th inst., the total loss being estimated at \$80,000. No damage was done to the manufacturing department, which is being operated on full time. Shipments, we are advised, will not be greatly delayed, as deliveries will again be resumed within a week.

D. B. WILSON, D. B. Wilson Hardware Company, Waterbury, Conn., died March 7. He had been ill about four weeks, being stricken a few days before the annual convention of the Connecticut Hardware Association, which he was unable to attend, although he had been chairman of the Committee of Arrangements. Mr. Wilson was a veteran Hardwareman of high standing in his community, and was proud of the fact that he had put in more years at the business than any other retailer in the State.

THE Bolenbaugh Hardware Company, Canal Winchester, Ohio, has been incorporated with a capital stock of \$12,000, succeeding R. W. Bolenbaugh. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Paints, Oils, Sporting Goods, Sewer Tile, &c.

J. F. Kramer has succeeded Kramer & Haverbeck, Minster, Ohio, having purchased the half interest held by the late S. A. Haverbeck. The lines handled include Hardware, Cutlery, Iron, Stoves, Tinware, Glass, Oils, Paints, &c.

F. J. Cross has purchased the business of J. S. Hall, Monticello, Iowa, and is carrying a stock of Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Agricultural Implements, Paints, Oils, Sporting Goods, Safes and Automobiles.

Colorado Retail Hardware and Implement Association.

The annual meeting of the Colorado Retail Hardware and Implement Association was held at the Albany Hotel, Denver, Thursday, Friday and Saturday, February 25, 26 and 27. The attendance was excellent and the work of the convention was entered into with much spirit, resulting in a very interesting and successful meeting.

President Starkey of Greeley, occupied the chair, and after appointing C. R. Hurd sergeant-at-arms, named the following committees to serve during the convention:

RESOLUTIONS.—John A. Steele, F. C. Moys, L. H. Bancroft.
AUDITING.—Will McAllister, J. J. Steinbaugh, E. L. Neelley.
NOMINATING.—A. L. Branson, C. H. Green, T. M. Harding.

National President's Address.

A. T. Stebbins, Rochester, Minn., brought greetings from the National Association, of which he is president, and made an address in which he told something about the national body and its work. Mr. Stebbins also touched on mutual insurance and its benefits and referred especially to the prosperous condition of the Minnesota company, the pioneer company in the Hardware field. Parcel post legislation, the good roads movement and the activities of catalogue houses also came in for mention, and in conclusion Mr. Stebbins recited a poem which counseled resolution and perseverance in meeting obstacles and troubles.

Question Box.

Among the topics considered under the head of the Question Box were the following:

How many times can the retail Hardware and Implement dealer turn his stock annually?

Mr. Unfug said that he turned his stock three times a year.

Mr. Gardner said that the Pueblo Hardware Company turned its stock three times last year.

Mr. Clark of Clark Hardware Company, Black Hawk, said that his house had turned its stock a little over twice last year. The capital stock is \$25,000; collections were a little over \$52,000, with \$17,000 in book accounts, as good as cash; \$3000 not good and \$2000 doubtful.

Mr. Unfug remarked that if he didn't count his credit sales he would not be doing any business at all, as credit sales were about 80 per cent, and the cash sales 20 per cent. Credits were 30 days on small articles. Implement were sold on most any time.

Mr. Clark said that his business was nearly all credit of 30 days and carried through the month and if paid by 5th or 10th of the following month the sales were counted same as cash.

Mr. Branson said his cash business amounted to about 20 per cent., and stock was turned three times a year.

Is it possible to do a successful cash business in the retail Hardware and Implement line in Colorado?

Secretary Unfug said no.

Mr. Branson said no one in his town was doing a strictly cash business except a grocer, and he had a ticket system which he thought would become too complicated.

Mr. Gardner said that at Pueblo they have as near a cash basis as any one there, but their cash sales were only about 25 per cent.

Should we not demand correct weights on our bills of lading from jobbers and manufacturers?

Mr. Branson said that two or three years ago his firm adopted a system of attaching a little printed slip to its orders, requesting that correct weight of car be put on bill of lading. When this was put on car it comes through without any alteration in the local office. Where weight on bill is not correct, it is useless to ask for a refund, but if you have correct weight it is easy to secure a proper adjustment.

Can we figure on all articles making the same per cent. of profit?

National President Stebbins said he was guided somewhat by the catalogues. He tried to get somewhere near

the catalogue prices on staple goods, and thought it paid to cut 1 per cent. all along the line sometimes. He aimed to get a larger profit on less staple goods. "We are apt," he said, "to add too large a profit on staple goods and we lose the farmers who send to the catalogue houses." His advice was to study the catalogues and put merchandise accordingly.

Should we give employees special prices on goods for their own use?

Mr. Harding said he thought it was a matter for each merchant to regulate himself. It rested between the merchant and his employee.

Secretary Unfug said his idea was to furnish such goods at invoice price with freight and cost of doing business added.

Mr. Jamison said he thought employees should pay everything but the net profit made by the merchant. Ten per cent. off retail prices on some things would do, but on others not more than 5 per cent. He said that the



ADOLPH UNFUG.



F. C. MOYS.

large department stores had a schedule according to the term of service of employees; To those over one year, 10 per cent. off retail prices was given; to those employed several years, 15 per cent., and to older employees, 20 per cent. He thought this a much better way than adding freight and cost of doing business. He did not believe in educating employees and the public in the knowledge of the details of cost of doing business.

Is it better to mark retail prices in plain figures or in cipher?

Mr. Valentine stated that after a trial of four years he believed that plain figures were preferable and that he marked ranges in big figures. Mr. Stebbins thought that local conditions must govern, suggesting that if goods were marked in plain figures, competitors might get the prices and mark the same articles a little lower. Some stated that they marked small articles in plain figures and large ones in cipher; others did just the reverse.

Other questions discussed were jobbers selling to consumers, of which there was a good deal of complaint, and the best method of handling and selling dynamite and blasting powder in a small incorporated town.

President's Address.

The annual address of President Starkey was of a character calculated to stimulate the members of the association and impress upon them the importance of faithful and prompt attendance on the scheduled sessions and intelligent co-operation with the officers who are conducting the association's affairs. He especially urged that the meetings be regarded in the light of round table talks and that all take an active part in the discussions. Continuing, he said:

Let us wear off the usual opening embarrassment and not wait till the last day to get acquainted and renew old acquaintances. This is your convention and mine. No set of officers are running the Colorado Retail Hardware and Implement Association. You elect your officers to manage its affairs, and they do the best they can, and they want your suggestions, but it is your association, and the success of this meeting lies in your attendance.

Work to Be Done.

An elaborate programme has been arranged for your entertainment by the local jobbers, but while we make an annual outing of this meeting, do not let us make it nothing but a jollification meeting. I like fun, but let the officers have your support and give your attention in these meetings to matters of vital importance, which the programme announces, but do not hesitate in also bringing up any new subject on which you may wish to have information or advise from the other members.

A Hard Year.

I won't review the doings of the past year, as the secretary has that well in hand, and no doubt will cover in his report, but I will say that during the past year in some portions of Colorado the conditions have not been the most favorable or pleasant. We started in with the remains of the panic of the previous year, and which was succeeded by a very dry season and lack of snowfall, all of which worked a hardship to some of our members, especially in the Vehicle line; but, in the language of Secretary Dye of District No. 2: "Let us forget it." Last year's experience was

Not an Unmixed Evil

because we learned something from it. Stocks have become reduced, and we have become more conservative in the conduct of our business, especially in the extension of credits and the carrying of stocks. The year 1909 bids fair to be a good one, and promises a record business in the vehicle and implement lines. Snow fall is a very essential thing in an irrigated country, and the remark I have just made which shows that we are better business men also goes to show that we will have a prosperous year. This will necessitate better business methods, the carrying of stocks; more and up-to-date advertising; having more and better salesmen; using better fixtures; the necessity of stopping leaks and solving the problem of curtailing unnecessary expenses; the necessity of selling on closer margins and on shorter time, and, if you want to stay in the business, the

Necessity of Figuring Costs.

This last item could be well made the topic of an entire session, as it has been of other gatherings, and the trade papers are full of it. I have here a list of questions in these envelopes and I want you to fill them out and mail to me at Greeley. They will be explained to you more fully, but I will state that the questions are on "The Cost of Doing Business." They contain a set of questions, but town and name of sender are left blank, so you are not giving anything of your business away. You may deem this unimportant, but I assure you it is not. The national organization wishes to help you and I ask you to accede to their request and fill them out. They will be grouped and classified, and it will be found where our leaks and weak points are, and will show where we can improve as a whole. I am sure we can then average up uniformly.

Money Carries Interest.

Our secretary says his responses for dues have been very liberal. We are not in the association as a money making business, but a small amount of money is necessary to run anything, and if you get a man's money into anything you get him vitally interested even if only a small amount. Take this home to you. And to digress a little, I think the catalogue house that gets a man's money invested in an article, no matter what it is, even if he is stuck he will stand for it because he has his money in it, whether it be \$1 or \$100. The idea is that we should sell only for cash or on notes. A plow will work better if settled for.

Stick to the Association!

We are accomplishing something by being combined. Every trade evil will vanish before us. Our association may be likened to a school. It may have the best building and libraries and hire the best teachers, but if the pupils do not place themselves in line with the plan of the institution little or no education will result. Make yourself an important factor of the Colorado Retail Hardware & Implement Association. There are only about six fortunate or unfortunate enough to be officers or directors and your membership fee is just as good as theirs. Be loyal to your officers and directors, especially to your secretary, for upon his work depends your success and his hands are tied without your aid.

Secretary's Report.

From the comprehensive annual report of Secretary Wulfug, Walsenburg, the following extracts are taken:

During the year that has passed your secretary has endeavored to keep up the work of the association to the ex-

tent of his limited ability and has devoted as much of his time to further the interests of this organization as possibly could be spared without jeopardizing his private interests entirely. I am sorry to say there is

A Seeming Lack of Interest

on the part of a good many dealers, largely because of the fact that they are not conversant with the results obtained through this organization and which might be greater if it had the undivided support of every dealer in the State. There are in Colorado about 500 dealers, and only 190 of these dealers are members of this association. I have sent several letters to each dealer in the State, but the result as to applications for membership has been very discouraging. We will not give up.

I attended the National Retail Hardware convention at St. Louis last March and was gratified at the astonishing progress our association is making nationally. There were present 102 delegates, representing 31 States and 14,000 Hardware dealers, not including Texas and the Pacific Coast States, which at that time had not affiliated themselves with our National Association; but indications are that in the very near future there will not be a State in this great Union which will not come into the national camp.

Jobbers and Manufacturers Selling Consumers.

On December 3, 1908, your Executive Committee convened, and among other issues discussed was one pertaining to the jobbers and manufacturers selling to the consumer at dealers' prices, whereupon the following resolution was adopted:

Whereas, It has come to the notice of this committee that certain manufacturers and jobbers have seen fit to sell their wares at wholesale prices to the consumer and at the same time asking the legitimate retail dealers of the State for their patronage; be it

Resolved, That the secretary of this association is hereby instructed to request all wholesalers and manufacturers that it is the wish of this body to either sell their goods at retail prices to the consumer, or if this cannot be done to refrain from selling the consumer entirely.

A copy of these resolutions had been sent to all manufacturers and jobbers in the State with the request to be present or represented at this convention when the matter will come up for discussion.

Members Are Careless.

One of the main principles of this association is to induce the members to secure their goods from the manufacturer or jobber who sells his wares through legitimate channels. It seems that the jobbers of this State and some outside of the State are disregarding the interests of the dealers more than ever and for which the dealers are to blame to a great extent themselves. Not a single complaint has reached this office during the year from the members, and as there must certainly be many localities where these conditions exist, it is clear that members are not using the association as they should.

There never was a time when co-operation among business men of every class was so important as it is at present. Competition is very fierce in every line, and it would be of material benefit to every dealer to belong to this association. Other lines of mercantile interests are working successfully under organized effort.

The Past Year

has been to most of the dealers, and especially to those who handle implements only, an unprofitable one. With large stocks on hand, unfavorable seasons and poor collections they had a rocky road to travel. District No. 1 held its annual meeting at Berthoud December 16 and District No. 2 at Pueblo December 14. Both were well attended and dealers in towns in these districts seem to get closer together, which, however, cannot be said of the Pueblo dealers. It seems impossible to enthuse our friends there; the big stick should be brought into operation in that locality.

Itinerant Vendor Law.

Our Supreme Court has not as yet rendered a decision in a case instituted in my home county, People vs. The Spaulding Mfg. Company, wherein the constitutionality of the Itinerant Vendor act was attacked. Our present Attorney-General, the Hon. John T. Barnett, should be interviewed and be induced to have, if possible, this case advanced on the docket for decision to as early a date as permissible.

Some Gratifying Results.

The American Railway Association has modified its rule so that loaded shells and metallic cartridges of a maximum weight of 75 lb. may be packed in cases containing other merchandise without regard to the number so packed. The Carriage Manufacturers' Association of America, at a recent meeting, held at Chicago, went upon record as being opposed to selling samples at fairs. Matters of this kind should be appreciated by the dealers at large, as it is only through the persistent efforts of the different associations, of which we are a part, that evils of this kind are remedied.

Parcel Post.

Under date of January 15 I mailed to every dealer in the State reprints of editorials from *The Iron Age*. How

many of you have done as I suggested? Have you circulated petitions? Have you induced your local newspaper to copy these editorials? Have you written your Congressmen and Senators?

The personnel of the Colorado delegation at Washington will change March 4. The *Interstate Trade Bulletin*, published at Denver, in its November issue says that Colorado's four new Congressmen are pledged to oppose parcel post, including Chas. J. Hughes, who will undoubtedly be the junior Senator from this State.

This sounds good, but we must keep up the work, write personal letters to Congressmen and Senators, circulate petitions protesting against parcel post in any form, advancing the argument of a \$16,000,000 deficit last year, which certainly would increase should the measure as introduced become operative.

Case and Cartage.

The Pacific Federation of Hardware and Implement Associations have been waging a bitter fight against charging for case and cartage. I am advised that the coast jobbers have agreed that after February 1, 1909, this practice will be discontinued. Another victory of organized efforts.

A Hardware Senator.

State Senator Harrison Teller was introduced as a Hardware and Implement merchant and member of the association, who has broken into politics and is doing things for his brother merchants in the Legislature. From his able address on the subject, "Legislation Beneficial to Our Interests," we make the following quotations:

There is a widespread feeling, which I do not think, perhaps, is true of Colorado alone, that legislation will cure all the ills which flesh is heir to, and that the only thing necessary to be done, if we think we have a grievance, is to take it before the Legislature, and have our own particular views or ideas made into law.

Legislation Run Mad.

There are, in this session of the Legislature, something like 1100 bills introduced, and, aside from the regular appropriation bills, most of them are for some particular class of people, intended primarily to benefit that certain class. The barbers have one, the butchers, the medical fraternity have four or five, the laboring men have plenty, and some of them, such as the Labor Lien law, which I will refer to later on, are absolutely vicious and certainly not along the lines beneficial to the association.

Now it is somewhat inconsistent, from my point of view, to oppose the passage of those special laws for other people, and then walk up and demand the same sort of laws for ourselves. You will, no doubt, get the idea from this, that in my judgment we want as little law as possible. We have too much already. Two-thirds of our present laws are not enforced; there is occasionally a sporadic attempt to enforce certain laws, popular clamor being largely to blame, or, perhaps, I should say partly responsible for such conditions, but

The Public Forgets Very Quickly.

and then drops back into the old rut. You all remember that some years ago this organization had a law passed, and it was supposed at that time it would absolutely prohibit (by making the license fee so great) the trailing of Buggies in the State of Colorado. I guess we are all willing to admit now that it did not do us a particle of good, and in this connection, although it has nothing in particular to do with the subject under discussion, I wish to give you

A Practical Suggestion.

If it is possible for the manufacturers of Buggies in Indiana and Illinois to ship their stuff to Colorado to a territory absolutely unknown so far as the financial responsibility of the party to whom they sell is concerned, to sell on long time and make a profit on the stuff, why in the world don't you good people adapt yourselves to the same tactics under the same conditions. Instead of buying cheap stuff, buy the best. You know the people with whom you are dealing, you know their ability to pay. You know all the circumstances; you have the trailer absolutely at a disadvantage. Why don't you copy his methods? Don't wait until he goes over the territory and sells every man in it a Buggy; get your work in first, and I will venture to say that if you did this, and sold the farmer good goods, at good prices, the trailer would seem be a thing of the past.

The Labor Lien Law

which I mentioned some time ago, and which is up for consideration in the present House, provides that any individual doing any sort of work on any farm in the State of Colorado, can file a lien against said farm, or crops growing thereon, any machinery, tools or horses of the farmer's, and it becomes under these conditions, a lien against his entire property. He may have worked a day, he may have only picked up one sack of potatoes, or thrown up one load of hay, but in the event of the farmer's inability or refusal to pay spot cash for such services, the title of his entire crop and tools is clouded. I simply call attention to this at this

time because I am convinced that it will become a law, the labor interests in the House being very strong, and apparently capable of passing any legislation they desire, so the only thing for us to do the coming year is to be more careful than ever in extending credits, and in case we want to help some fellow out, who is not absolutely gilt-edged, it will be desirable for us to take a chattel mortgage early in the season.

It Isn't Legislation

that we want, nor do I think it would do us any particular good if we got it. What we want is a good, clean, strong organization with the very best feeling prevailing among its members, particularly where they live in the same town. Competition may be the life of trade, but there are too many men in the world to-day, who have spent the best years of their lives in trying to build up a business, and find in their old age that their customers have made all the profit, and it is a doubtful proposition whether these same customers will think enough of them to attend their funeral. Ours is not in any sense an association in restraint of trade.

It Is an Organization to Promote Good Will

among its members. It has already done, as I know, a great deal of good. It has brought its membership closer together in social relations. It has resulted, in instances of which I know, in bringing together in the same town, people who heretofore were actively engaged in cutting each other's throats. Just so long as we follow along the same line which we have laid down for our government, selling the farmers the best goods which could be obtained, at a fair and reasonable price, using our association to cut out dead beats, eliminating as far as possible the men who want to do business for fun, treating all our customers with the same courtesy and consideration which we expect ourselves, we will find that our business will grow, that our association will have the confidence and the respect, not only of ourselves, but of our friends and customers, and that the desire for special legislation in our own behalf will cease to be a factor. We shall then be able to do what every good citizen ought to be glad to do, not to insist on legislation in our interests, but to go with clean hands, and absolutely and unqualifiedly oppose legislation for any class.

Retailer's Co-operation with the Consumer.

A notable address was that of Geo. V. Richards, Denver, on "Closer Co-operation With the Farmer and Consumer," through the American Society of Equity, of which he is state organizer. Mr. Richards' address was as follows, in part:

During 10 years of organization work among Colorado merchants I have studied your trade evils and the most feasible plan for their diminution or elimination; I have studied your attitude toward the consumer, and vice versa, and in this study I have become firmly convinced that the greatest handicap to the realization of better trade conditions lies in the fact that you have not the confidence of the consumer to any marked degree.

That this is a fact is demonstrated by the apparent antagonism existing to-day between retailer and consumer, and you know that in a general way this antagonism does exist. So long as this condition remains in vogue, so long will you be deprived of your just due. The consumers are somewhat at fault for this condition themselves, but the greatest fault can be attributed to the merchants.

Branded as Robbers.

Without an organized protest or contradiction the merchants of this State have allowed the catalogue houses, department stores and some advertisers in popular magazines to brand them indirectly as robbers.

Without a protest our merchants have witnessed skin-flint and crooked retailers temporarily enter the State and skin the consumers. Without a protest our merchants stood by and saw the grocery trade of the State accused of robbing the consumer as a trust.

Without a protest they have seen certain elements of the retail trade combine with jobbers and manufacturers to bleed the consumer. Without a protest they have seen certain elements of retailers combine to set a buying price on eggs and other products, thus forcing many a farmer to sell these products below a fair price. All of which is, of course, legal.

The daily press has from time to time exposed all these irregularities, and our merchants in every town and in every line, through their lack of an organized protest, contradiction or investigation, stand self-accused in the eyes of the consumer. The unpardonable act of one line has reflected upon the whole, with the result that the honest dealers are classed with the crooked ones. For the consumer says: "If the grocer will beat me, the Hardware and Implement man will, too." But if the Hardwareman protests against the skinning process of the grocer, then the consumer says: "Well, the Hardwareman is honest, anyway."

This is the condition that exists to-day, and which is

driving more business into the catalogue houses than anything else.

Consumer Overlooked.

In your co-operation with the jobber and the manufacturer you have overlooked the consumer. Now join hands and try a period of co-operation with him and you'll find results satisfactory.

Win back the consumer's confidence. Mingle with him in one organized body working for the whole. If a combination springs up in any line to take an unfair advantage of the purchasing public, have the organization investigate it and expose it.

In semimonthly meetings educate the consumer to the fact that the dead beat is as much of a detriment to him as it is to yourself. Explain to him the difference in quality between your goods and those of the catalogue houses. If necessary show him your invoices and prove to him that the profit you are making is only an equitable one to which you are entitled.

Show him that spending his money at home enriches his community. Help him secure an equitable price for his products and still further enrich your community. Take an interest in him and do away with the idea which infers: "I don't give a continental, the consumer pays the freight."

There has been no period in our history where an effort was ever made by our merchants to co-operate along these lines, and, speaking from my observation and from the standpoint of a consumer, I am positive it will work to your satisfaction, as it is in other States.

The consumer is becoming wise. He knows that through certain combinations of local retailers, jobbers and manufacturers he has been forced to pay unwarranted prices for certain necessities of life.

He is now on a tack of his own—and it is this tack that is widening the gulf between him and the retailer and throwing money into the catalogue houses more regularly than ever before.

It is up to you to win back his confidence and his co-operation, and if you succeed you'll find this co-operation of more value than that of any other class.

The A. S. of E.

The American Society of Equity is a national organization, with headquarters at Indianapolis. While its age is only that of a few years, it has a membership bordering well on to a quarter of a million members and is thoroughly established in New York, Indiana, Illinois, Wisconsin, Minnesota, North and South Dakota, Nebraska, Arkansas, Kentucky and Virginia. Other States are being organized as rapidly as possible. The objects of the organization are founded upon the broad principles of equity. And it advocates that every individual or class is entitled to what is equitably his and no more.

What the Society Stands For.

It maintains that the farmers are the ones who should decide and name an equitable price upon their products, and that they should band themselves together for the purpose of helping each other maintain and secure this equitable price.

It maintains that the merchants are the ones who should decide and name the equitable price they should receive for their goods.

It maintains that the farmers and merchants should band themselves together for the purpose of helping each other maintain and secure these equitable prices, and thereby enrich their community. Your interests are identical.

It maintains that the farmers, owing to lack of organization founded upon right principles, have neither named nor secured equitable prices for their products—which is true.

It maintains that when the farmers maintain and secure an equitable price that stock gamblers and speculators will be virtually unable to handle farm products, and that the consumer will be placed in a position to buy said products at a lesser cost.

A union of farmers and merchants working hand in hand to obtain these objects will result in what? It will bring the farmer equitable prices for his products.

It will bring the merchant a greater demand for better grade of goods at equitable prices.

It will greatly diminish if not eliminate the business going out to the catalogue houses and metropolitan department stores.

It will diminish, if not eliminate, the deadbeat.

It will inspire confidence in each other and enrich your community.

And last, but not least, it will give you a power at the polls to secure legislative reforms to your mutual interest.

Treasurer's Report.

The report of the treasurer, Mr. Unfug, which was approved by the Auditing Committee, showed total receipts of \$1086.21 and disbursements of \$844.30, leaving a cash balance of \$241.91. Many members were found to be somewhat in arrears of dues, the association showing resulting necessary arrears to the national organization. The secretary was requested to use his best

judgment in actively following up the collection of these dues.

Resolutions.

In addition to the usual expressions of appreciation, &c., the following resolutions were adopted:

Whereas, The National Hardware Mutual Fire Insurance Company has been managed on an economical and intelligent basis and has proved a successful adjunct to the Hardware Association, inasmuch as its benefits and privileges are restricted to members of Hardware associations affiliated with the National.

Resolved, That we commend the National Hardware Mutual Fire Insurance Company to the favorable consideration of our members, and recommend that so far as possible our members carry their insurance in this and similar State companies.

Whereas, The custom of long extension of credits has proven disastrous and unsatisfactory.

Resolved, That it is to the mutual interest of merchant and consumer that our business be conducted on a short time, secured or cash basis.

Whereas, It is the custom of various Colorado manufacturers and jobbers to sell their wares at retail at very near if not quite as low a price as they make to merchants, this condition making it necessary for us to buy many of our goods in Eastern markets or in larger quantities than we require.

Resolved, That it would be equally beneficial to the jobbers, manufacturers and retailers if the manufacturers and jobbers would either discontinue retailing or maintain a reasonable differential between prices to consumers and merchants.

Whereas, The agitation in favor of a parcel post is still continued by certain interests for their own selfish purposes.

Resolved, That this association is unalterably opposed to such legislation as uncalled for as well as inimical to the best interests of the country at large, and we urge each member to write his Representative in Congress asking them to oppose said measure.

Whereas, The State of Colorado has been building State roads with convict labor, and a bill is now before the Legislature providing for the continuance of said work.

Resolved, That we approve of such work and urge upon the members of our Legislature the passage of the aforementioned bill.

Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, John A. Steele, Gunnison.

VICE-PRESIDENT, Charles Baumgartner, La Junta.

SECRETARY-TREASURER, F. C. Moys, Boulder.

DIRECTORS, one year: Edwin Starkey, Greeley; two years, A. L. Bransou, Trinidad.

Convention Notes.

Other addresses at the convention were made by Senator Clayton, Greeley, president of the Rocky Mountain Coal Dealers' Association; Mr. Russell, also of Greeley, president of the Colorado and Wyoming Retail Lumber Association; Martin Bristol, a Hardware merchant of Nebraska, who brought greetings from the Hardware Association in that State, and referred to its recent successful convention, and Mr. Parker, John Deere Plow Company, Kansas City, Mo.

At the Thursday afternoon session Governor Shaffroth made an address in which he heartily welcomed the members to Denver and referred to the importance and value of trade organizations.

The entertainment side of the convention was ample and was very much enjoyed by the members and the ladies accompanying them. The principal features were a theater party at the Orpheum on Thursday evening, given by the local Hardwaremen, and a banquet on Friday evening at the hotel.

E. C. Atkins & Co.'s New Catalogue.

E. C. ATKINS & CO., INC., Indianapolis, Ind., have just issued a fine catalogue of 256 pages, cloth bound, of Saws in great variety, Saw Tools and Mill Specialties. The first section illustrates and describes the different manufacturing plants and branch houses and includes a telegraph code. Section two covers Circular, Band and other Mill Saws for making lumber. Section three relates to Hack Saw Blades and Frames. Section four embraces segment and one man Saws. Section five refers to all kinds of Hand Saws and Hardware Specialties. Then follow Saw Makers' Tools, Saw Mill Specialties, Machine Knives and Corundum Wheels.

INDIANA RETAIL HARDWARE ASSOCIATION.

The convention concluded last Friday at Indianapolis was regarded by all who attended as an exceedingly pleasant, profitable and well managed meeting. The attendance was good, the business sessions were of great interest and value, participated in by many individuals all directly connected with the Hardware business, and the accompanying Hardware show surpassed any previous one that has been held in the State.

The programme was especially enjoyable, being marked by many short, crisp addresses touching on practical topics connected with the store or the association and avoiding the somewhat vague and unproductive realms of mere oratory or theory. It was well varied and under the tactful and witty direction of President Creed abounded in the lighter touches of humor and good fellowship always thoroughly appreciated on such occasions.

The Attendance.

For various reasons the convention dates were somewhat later than usual, a fact which was thought to militate against the attendance. The season was, in fact, so far advanced and the weather during the week was so fine that many merchants of the State found it impossible to leave their stores on account of rush of trade, while others could only get away for a day or two at the most. It is, therefore, probable that next year's convention will be called a few weeks earlier; as early, indeed, as the last of January, if February dates cannot be secured without conflicting with other associations. In spite of these considerations, however, a large proportion of the membership visited Indianapolis some time last week

workers do not have a chance to give the exhibits as much attention as they wish to.

Certain it is that the four-day plan worked excellently this year, affording ample time for carrying out the pre-arranged programme, disposing of routine business and interjecting many interesting and helpful addresses by visitors from other associations.

National Officers.

The association fully appreciated its good fortune in having as its guests a number of able and prominent Hardware association workers from other States, including several officers of the National Retail Hardware Association. These gentlemen were able to be present because most other State conventions were over, a fact



F. W. BARTHOLOMEW.



W. B. CREED.



SHARON E. JONES.

and the final record of attendance was fully up to the anticipations of the officers.

As stated in our telegraphic report last week, the convention sessions were held in the handsome auditorium of the Knights of Pythias Building, a place admirably adapted to requirements. Connecting with the audience room were convenient committee rooms, smoking rooms, &c., the use of which in facilitating the convention work was greatly appreciated.

[A Four Days' Programme.

Another feature of interest in connection with this year's meeting was the arrangement of a four days' programme. This was done by way of experiment, and when the matter was brought up for discussion with reference to next year, there was found to be some difference of opinion as to whether it is advisable to add the extra day.

On the one hand it was argued that many cannot leave their business for so long a time, and would be likely not to come until the second day or else go home before the close. Arguments on the other side were that the closing session is likely to be slighted any way, and with a four days' programme three days of good attendance are assured.

Consideration was also given to the exhibitors who often travel a great distance, and go to much expense and trouble, and should be given the greatest possible opportunity to get the results they are after. In a crowded three days' session many active convention

which went far toward compensating for the disadvantages of meeting late in the season. The National Association was represented by its president, A. T. Stebbins, Rochester, Minn., and vice-president, H. L. McNamara, Janesville, Wis., as well as by F. A. Bare, Mansfield, Ohio, who is its treasurer and a member of its Executive Committee.

Mr. Stebbins addressed the convention Thursday afternoon, bringing out many valuable and interesting ideas and suggestions regarding association work. He declared that the present strength of the associations has been achieved through loyalty and individual support of the officers elected from time to time. The same loyalty and support are required for the accomplishment of the many things still left to do. He referred at some length to the parcel post question, asserting that farmers favored it because it has been urged by the farm papers living on mail order advertising, and do not really understand it. He said he knew from personal experience that they would not support parcel post after the arguments against it had been clearly stated to them.

Mr. McNamara made a congratulatory address, also referring to association affairs. He made a point of the necessity of merchants taking a more active interest in politics, and getting in touch with what is going on in the way of legislation. Many obnoxious laws get on the statute books, he declared, that would never have seen the light if the substantial business interests were alert and using their great influence as they should.

Other Guests

were W. P. Bogardus, Mt. Vernon, Ohio, a former president of the National Association, who made an unusually clear and forcible address arguing against a parcel post; C. A. Peck, Berlin, Wis., secretary-treasurer of the Wisconsin Association and Insurance company, and J. P. Duffey, Greenville, Ohio, and G. M. Gray, Coshocton, Ohio, respectively president and secretary-treasurer of the Ohio Insurance Company.

T. J. Fernley, Philadelphia, secretary-treasurer of the National Hardware Association, was present on Tuesday and made an address of congratulation and reminiscence, also alluding to timely topics of interest to the trade. A feature of his remarks was the suggestion that merchants might do well to have a counter calling attention to new goods, much as booksellers have a department for new books. He thought that some such plan might interest customers and facilitate in the introduction of profitable lines.

A. H. Chamberlain, New York, who attended the convention as the representative of *The Iron Age*, was very cordially received, many expressing their appreciation of the support and co-operation given the Hardware associations by this journal.

A conspicuous absentee and one whose fine personality and able participation in the convention work was great-

pansion and activity to a point from which our prosperity can be built up on a firm and stable foundation.

Responding to these kindly expressions, Vice-President Bartholomew said that the members of the association had a feeling of loyalty to Indianapolis and fully appreciated the cordiality of the welcome which they always received in that city. The support of the exhibitors at the Hardware show was also recognized.

Convention Committees.

The following committees served the association by appointment of the President:

NOMINATING: E. L. Wagner, Vernon; A. W. Smith, A. F. Brown, Darlington; H. C. Heldt, Oak City; Ernest Duffenbach, Harrisburg.

AUDITING: M. W. Coate, Kokomo; Hervey Trueblood, Washington; H. M. Bahls, Lafayette.

RESOLUTIONS: J. L. Fulton, Portland; J. D. Rimstedt, Rockville; James Boonshot, Petersburg; Jess Shoemaker, Sharon E. Jones, Richmond; O. K. Dunbar, Centerville; Edgar Dick, Terre Haute.

CONSTITUTION AND BY-LAWS: F. W. Bartholomew, Michigan City; M. L. Lewis, Marion; A. Reichenbach, Huntington; G. E. Daugherty, Owensville; W. A. Shipp, Lafayette; D. L. Baughman, Albion; Ed. R. Gardner, Monticello.

PRESS: Chas. E. Hall, Indianapolis; M. L. Corey, Argos; Walter B. Creed, New Albany.

RECEPTION: Louis Kinderman, Boonville; E. B. Schenck, Mt. Vernon; N. H. Strong, Shelbyville; S. L.



GEO. L. WATSON.



M. L. COREY.



CHAS. E. HALL.

ly missed was ex-President E. M. Bush, Evansville. His attendance was prevented by ill health.

A Hearty Welcome.

The opening session was briefly reported in our dispatch of a week ago. It was well attended, and the programme was marked by several features of especial interest. H. C. Atkins, E. C. Atkins & Co., Indianapolis, who made an address of welcome, also acted as the representative of the American Hardware Manufacturers' Association, of which he is a vice-president. Although speaking quite informally and without notes, Mr. Atkins' thoughtful and suggestive remarks were greatly appreciated and enjoyed. In alluding to the strength and importance of the association movement, he brought out the point that the organized merchants should not only concern themselves with trade problems and matters directly connected therewith, but should also have an interest in legislation, taking a firm stand in support of wise legislation and honest public life. He also spoke of the business situation, of which he took a comprehensive, sane and hopeful view.

Mr. Atkins' welcome was seconded by Cortland Van Camp, the honored head of the Van Camp Hardware & Iron Company, Indianapolis. This house has extended to the Indiana Association in all lines of its activity the most liberal and substantial support, of which ample recognition was made by President Creed. Mr. Van Camp stated that it was a pleasure to welcome the convention back to Indianapolis year after year, and expressed sympathy with its objects and appreciation of the work that it was doing. He also referred to the business reaction, stating his belief that it would prove a blessing in disguise, bringing us back from a state of unhealthy ex-

Ocker, Roanoke; Riley Hunt, Indianapolis; A. H. Burkert, Gosport; James Lilly, Fort Branch; F. W. Schaub, Indianapolis; Jas. R. Crawford, New Albany; E. Maier, Boonville; Chris Ahlbrand, Seymour.

Legislation.

The importance of merchants interesting themselves in political affairs, taking a decided stand on proposed legislation affecting their interests and arraying themselves on the side of clean and honest public life was emphasized by several speakers. In this connection special interest was felt in the closing sessions of the Legislature, which were being held during the week. Senator H. E. Grube, Plymouth, who is a loyal member of the association, was unable to attend the business sessions regularly because of his duties in the Senate chamber. He took pains, however, to show his continued lively interest in the association and was kind enough to send to headquarters a bunch of cards of admission to the Senate and Assembly for the use of members and their ladies who wished to see the Legislature in session.

Mr. Grube visited the convention hall during the closing session and was called upon for a brief address. He said that he was one of the few merchants in the Legislature and deplored the fact that so few legislators come from the substantial business men, who would be most likely to enact good laws and conduct the affairs of the State in a businesslike and economical way. Business men, he said, have no right to criticise the legislators or complain about their acts unless they will get posted, keep in touch with political matters and work actively for what they want. The people get what they want in the long run.

A measure known as the Uniform Accounting bill, calculated to prevent graft and bring systematic modern

business methods into the municipal and county offices was passed by the Legislature during the week and submitted to the Governor for his approval. A special resolution approving the ordinance and urging that it be signed was passed by the convention and sent to the Governor, who did sign the bill before the close of the convention.

Mutual Insurance.

Although there is no company in Indiana, Hardware Mutual Insurance was represented at the convention by able men calculated to secure for the principle, and for their companies the most favorable consideration. These included President J. P. Duffey and Secretary G. M. Gray of the Ohio Company, and Secretary C. A. Peck of the Wisconsin Company. Addresses of interest were made by all these gentlemen. Special attention was paid to the excellent practical suggestions made by Mr. Gray, instructing the members how to proceed in taking out insurance and how to have their policies written to insure absolute and complete protection.

The question of forming an Indiana fire insurance company was discussed, as was also President Creed's suggestion regarding the formation of a mutual life insurance company.

The Question of Incorporation.

The question whether or not the association should incorporate aroused an animated discussion and developed about an even division of opinion among those present. Those who favored it argued that it could do no harm, the expense was nominal and under certain conditions, remote no doubt, but nevertheless quite possible, it would afford most desirable protection to individual members. It was finally voted that the officers and Executive Committee should take the matter under advisement, employ counsel and if, after thorough investigation, they thought it advisable, proceed to take out incorporation papers under the laws of the State.

New Constitution and By-Laws.

The Committee on Constitution and By-Laws, through its chairman, F. W. Bartholomew, Michigan City, reported an entirely new constitution. Great pains was taken by the committee in drawing up these articles which combine the features regarded as most admirable in the constitutions of many other States. Some matters came up for discussion in convention, but on all important points the judgment of the committee was sustained. Of noteworthy interest was the reduction of the annual dues to \$3, the limiting of the Nominating Committee to five members, which was held to be a more practical and easily working body than a larger committee, and the arrangement for delegates to national conventions to be chosen according to the Congressional districts of the State, each two consecutive districts being entitled to one delegate. It was provided that no grievances should be brought before the association except through the secretary.

Report of the National Convention.

Special mention should be made of the report of the National Retail Hardware Association convention at St. Louis, which was given by T. J. Gardner, Scottsburg. The report was very much out of the ordinary and was enjoyed to an unusual degree. Mr. Gardner's remarks were extemporaneous and were often touched with a vein of humor. Without attempting to cover the proceedings in detail, he referred in an original way to various features of special interest which he selected with rare discrimination. When he finished his report, all felt that they had received something of the real atmosphere and spirit of the national gathering.

Election of Officers.

Fred W. Bartholomew, Michigan City, the newly elected president of the association, is admirably fitted for the office. He is a man of intelligence, force and initiative, which promise a strong and efficient administration. He has been an active association worker for several years, and has a large acquaintance in both State and national organizations. Following is the list of officers elected for the ensuing year:

PRESIDENT, Fred W. Bartholomew, Michigan City.
FIRST VICE-PRESIDENT, Sharon E. Jones, Richmond.
SECOND VICE-PRESIDENT, Geo. L. Watson, Cayuga.
TREASURER, C. E. Hall, Indianapolis.
SECRETARY, M. L. Corey, Argos.

NEW MEMBERS EXECUTIVE COMMITTEE: Wm. Hubbard, Scottsburg; G. E. Daugherty, Owensville; A. F. Brown, Darlington.

DELEGATES TO NATIONAL CONVENTION: E. B. Schenck, Vernon; H. A. Dooley, Rockville; H. B. Griffith, Shelbyville; H. E. Magee, Winchester; Leonard Laird, Otterbein; J. E. Smith, Attwood.

Resolutions Adopted.

Among the resolutions adopted by the convention were the following:

Whereas, The members of Congress have not the time to investigate the many articles making up our tariff schedule; and
Whereas, Without a thorough investigation no just conclusions can be reached; and

Whereas, Such investigations should only be done in a businesslike and thorough manner by some other persons than members of Congress; and

Whereas, It is a Congressman's duty to represent his constituency in Congress without being taken away from his duties by protracted absences; and

Whereas, Such duties as gathering information can be delegated to other persons and better done by them; be it

Resolved, That we request and urge Congress that a tariff commission be appointed to the end that tariff tinkering and its detrimental effect on the commercial affairs of this country be stopped;

Resolved, That the best interests of all can be had by the creation of a tariff commission;

Resolved, That the tariff question should be based on business first and politics second;

Resolved, That a copy of these resolutions be sent to the President, Vice-President, Speaker of the House and our worthy Senator, Albert J. Beveridge.

Resolved, That we do most heartily commend the action of the Indiana State Legislature in passing House Bill No. 308 as amended relating to sale and display of Firearms.

Whereas, There exists a manifest and growing need for additional fire insurance protection at low cost; and

Whereas, A company organized under the laws of Indiana would be by reason of its location in our own State of especial usefulness to our membership, not only in the protection afforded but in the incidental and highly important advantages secured in the adjustment of losses when they occur; be it therefore

Resolved, That the Executive Committee be ordered to thoroughly investigate the matter of organization and that they be empowered, if they find it practicable, to organize and incorporate a company to be known as the Indiana Hardware Mutual Fire Insurance Company.

Whereas, We as members of the Indiana Retail Hardware Association are enjoying the benefits derived from the operation of the several Hardware Mutual Insurance Companies; and

Whereas, There seems to be a disposition on the part of many patrons to expect and demand increasingly large rebates or dividends for said companies; be it

Resolved, That we approve and commend the splendid, able and honest management exhibited in each and every one of the existing Hardware Mutual Companies, and we especially recommend that they at all times, in apportioning their divisible surplus or profits, look first to the establishment of an ample reserve, and secondly, to the payment of rebates.

Resolved, That we reaffirm our approval of the policy concerning the issuance of policies to members of the various State Hardware associations, and urge that care be exercised to the end that no outsiders be insured.

Whereas, We are heartily in sympathy with the movement to improve the rivers of our country, and are especially interested in the proposed improvement of the Ohio River; be it

Resolved, That we urge our representatives in Congress to use their efforts to pass that measure.

Be it further resolved, That we again express our continued and unaltered opposition to any effort looking to the establishment of a parcel post system, experimental or otherwise, in the United States.

We recommend that each year a Visiting Committee be appointed by this association to visit the sister State association meetings, bearing greetings of good will, and thus increase the fraternal spirit and helpfulness of these organizations.

Treasurer's Report.

To its treasurer, C. E. Hall, Indianapolis, the association is under great obligations, not only for his faithful and efficient handling of its finances, now a task of no small proportions, but also for his tireless efforts in promoting the success of the convention and especially of the exhibit feature. Being always on the ground he has had much onerous work thrust upon him, which has been assumed with an unselfish cheerfulness that is fully appreciated by every officer and member of the association.

His annual report showed a balance on hand of over \$5000, in which connection it may be remembered that the annual dues have been reduced by action of the Executive Committee from \$4 to \$3 per year. The report of the Auditing Committee, M. W. Coate, Kokomo, chairman, approving the books of the treasurer, was rendered in due course.

QUESTION BOX.

The Question Box developed some interesting and active discussions under the able leadership of Secretary C. A. Peck of the Wisconsin Association. Two questions which received considerable attention have been discussed under other heads—namely, whether or not the association should incorporate and whether it is advisable to organize mutual insurance companies in Indiana, either fire or life.

The matter of jobbers interfering with the trade of retail merchants received some attention with particular reference to supply lines, such as Pipe, Well Supplies, Plumbers' Supplies, &c.; also Blacksmiths' Supplies. The opinion seemed to prevail that conditions in these particular lines were established on such basis that the influence of the Hardware retailers, even through their organization, would hardly be sufficient to alter them. On Fence, Builders' Hardware, Sporting Goods, &c., a different attitude was taken.

The best method of procedure in the adjustment of grievances was distinctly brought out and many members expressed the intention of exercising a more active and aggressive policy along these lines during the coming year. Among the other matters which came up were the following:

Is it necessary to put the rural delivery route number on mail matter?

It was brought out that it is the business of the Post Office Department to deliver letters to addressees on rural routes without other definite direction than the familiar R. F. D. It was suggested that to put on the route number, or box number, or to request too much information or assistance along these lines from local postmasters, was to be discouraged because of its influence in the direction of methods and service desired by the mail order houses.

How can merchants get a list of manufacturers who insist on selling catalogue houses?

It was stated that any desired information along these lines could be furnished by the secretary's office.

Should Hardicarmen engaged in the Implement business support an association composed of Implement dealers only, or should the scope of the Hardware association be sufficient to embrace such Implement dealers?

A large majority of those present were found to handle Implements, and it was generally agreed that the association should be open to Implement dealers whose qualifications seem adequate to the Executive Committee. Considerable further discussion as to the scope of the association with reference to general stores handling Hardware, &c., developed the fact that the organization is disposed to take liberal views of these matters, since it was recognized that in small towns the Hardware merchant is often a general merchant as well.

Does the price marked on an article in the show window or the article itself bring people into the store?

A discussion of this question opened up the old problem as to the advisability of giving prices in window displays. It was suggested that if articles are cheap of the kind, or are for any reason to be sold at an especially low price, it is a good plan to mark them, but if, on the other hand, they are to be sold on a basis of quality, or need talking, it is better not to mark them, so that a person interested will come in and make inquiries, thus giving the merchant or his salesman a chance to explain their advantages, and by arguments effect a sale.

One merchant said that he had found it a good plan to mark prices on goods shown at holiday time, since such a policy facilitates purchases and saves time both for customers and for people in the store. When goods are marked people can, knowing how much they care to spend, make their selection without the assistance of a clerk, and will often come in, state exactly what they want and get it in a very few minutes.

The matter of adding lines of toys and special holiday goods for the Christmas trade was discussed in an inter-

esting way by Sharon E. Jones, Richmond, who gave the members the benefit of his valuable experience along this line.

PRESIDENT'S ADDRESS.

From the enthusiastic and conscientious efforts of President W. B. Creed, New Albany, the association has greatly benefited. Of a genial and unassuming personality, Mr. Creed conducted the sessions in an efficient manner, tempered with a contagious humor that delighted every one. From his interesting and stimulating annual address we quote as follows:

The Indiana Retail Hardware Association to-day celebrates its tenth birthday. From a small beginning we have grown into a large organization, the rapidity of our growth showing the measure of our success.

Our meeting together has done much to correct trade evils and promote good, sound business methods. We feel we have much to pride ourselves on, and to be thankful for. Our association is to-day as well organized as any trade organization in our country. We have done our share to arouse a sentiment against unwise legislation; we have paved the way for that friendly co-operation among business rivals that is so necessary to success—the principle of live and let live.

Reviewing the Experiences of the Past Year

is not an especially pleasant task. It is useless to try to explain the cause of the financial depression. Many things conspired to bring it about, but I think you all will agree with me that the worst is over, and while we have suffered in a monetary way, yet the experience and the hard rubs we have had are not without profit to each and every one of us.

Notwithstanding the business depression since we last met together, our association has prospered, our membership has increased, a much better interest has been shown with more promptness and willingness to assist your officers. So, taking it all together, the rough usage we have had to stand has at least served a good purpose—the cementing of friendships and greater loyalty to our common cause.

Mutual Fire Insurance Companies.

Regarding the mutual fire insurance companies in which we are carrying a large portion of our fire insurance, I would like to call attention to the excellent manner in which these companies are handling our business. It seems to me that they ought at the present time to begin building up a large reserve fund. We are now receiving from several of the companies a return of 50 per cent. of the premium which we pay them, and it does seem to me that we ought to be satisfied with such a magnificent return as this.

The tendency of the times, in my opinion, will force the old line companies to lower their premium. Now, if they lower their premium, it will still be up to the mutual companies to return us as much of the premium as they are now returning. If this should happen the reserve fund which our mutual companies have accumulated will, of course, be lessened.

Therefore, would it not be wise to take some action as a body upon the matter of the return premium which is paid us by all the companies in which we insure in order that the amount of premium returned to us be not increased, but rather that the assets of all the mutual companies be increased to such an extent that no one could question their stability.

Nine-Foot Stage in Ohio River.

Having been a member of the Ohio River Improvement Association for a number of years your president attended the annual meeting which was held in Louisville, October 22 and 23. This meeting was one of the most interesting that I have ever had the pleasure of attending, and the addresses delivered along the line of this improvement were in keeping with this great organization. Some of the most prominent men in this country were in attendance and delivered addresses, and during the session of the last Congress thousands of men from the Ohio Valley left their business and went to Washington to push to completion the 9-ft. stage.

Having a 9-ft. stage of water the year 'round from Pittsburgh to Cairo is, of course, of direct benefit to merchants of the southern part of the State. However, I would recommend that you take some action and use our influence to further the interests of this project, as it will be of benefit not only to a certain section of the State but to the whole State of Indiana as well. It might be of interest in passing to say that the Ohio River touches 13 counties in the southern part of our State, and has a frontage of 351 miles.

Mutual Life Insurance.

At our executive meeting last June the consent of the Executive Committee was given for me to present to you at this meeting the idea of forming in this State a mutual life insurance company. The matter has been looked into very

thoroughly, and it is the opinion of expert attorneys in this line that this can be done in a very simple manner.

I have been a member of the Commercial Travelers' Association of this State for 25 years. This association is operated on the assessment plan, \$3 being the amount of each assessment. The total number of assessments since its organization have been 187. The dues in addition to the assessments are \$1 per year. The amount of insurance each member is allowed to carry is \$2000. The only paid officer is the secretary-treasurer. Our idea is to operate a company on the plan of the old line life insurance companies, and as soon as we have accumulated enough surplus to return some of the premium to the members.

If this suggestion be of enough interest to the members, I shall be very glad a little later on to enlighten you more fully in regard to the ways and means of such a company. I might add that there is nothing to interfere with our insuring hardware merchants of other State associations.

State Legislation.

Last December the Executive Committee was addressed by T. F. Vonnegut, secretary of the Combined Committee of State Civic and Commercial Organizations of Indiana, on the subject of the Uniform and State Inspection bill, which this organization proposed to have brought up in our State Legislature. We pledged this organization our support along the lines of the bill as originally presented.

Later on, when a number of amendments were tacked to it, and the politicians were attempting to get this bill into politics, I wrote W. C. Bobbs, the chairman of this committee, that we had backed this measure with the distinct understanding that it was nonpolitical, that the campaign for the bill was nonpolitical, and that the reasons which required its passage were business reasons for the business interests of the State.

He replied that he was in perfect accord with the above statement, and that they were using their utmost endeavor to have the bill passed without any amendments, and that in his opinion it was a reflection upon the intelligence of the business interests of the State to have the responsibility for the appointing power of the State Examiner placed with a fiscal officer whose office must be examined.

I trust the action of your Executive Committee will be upheld, and that you will all use your influence to have at least one measure passed at this session of our Legislature which is in the interest of the business men and also in the interest of each and every citizen of this State.

SECRETARY'S REPORT.

In his annual report M. L. Corey, Argos, the association's active secretary, stated that 135 new firms had been added to the membership within the year, making a total enrollment of about 800. The report was in part as follows:

The past year has been especially noted for its business changes among our members. We have records of at least 60 successors or additions. Several of our members have incorporated, and it seems a growing custom to extend to the more faithful and deserving employee a chance to share in whatever profit the yearly balance sheet may show. The difficulty of retaining the service of this class undoubtedly influences some members, but others figure that they thus secure more active interest in the success of the business by sharing the results with their clerks.

One hundred and thirty-five new firms have been added to our membership list during the year, which gives us about 800 retail members. If we add our honorary members (which is done by some associations) we can now justly claim a membership roll of over 1000. Our financial condition, notwithstanding the reduction of dues to \$3, is even more satisfactory, as the reports will disclose.

Any Organization Is Strong or Weak

in proportion to the loyal, united and energetic backing that is extended by each individual member. In our early days, when numbers were small and our opinions divided, there was some excuse for lack of prompt co-operation, but now it seems to me the time has come when we should move together in treating the problems that affect our mutual prosperity as retail Hardware men.

Business policies and business legislation are broad questions that demand more attention at our hands. We can double our influence in their direction if we are wide awake to our opportunities.

Business Legislation.

Without dwelling upon the scandals that have attended the administration of our public county and municipal affairs I think you will agree that some reform is highly desirable. This led your officers to indorse the movement of the Indianapolis business men to secure a more uniform and up to date accounting system.

We opposed a bill that prohibited the display of revolvers, pistols, knuckles and billies in any show window or show cases. This bill has passed the Senate after striking out the words revolver and pistol. We agree that the

carrying of knuckles and billies should be stopped, but fear any State law of this kind will not bring this desired result. Also another bill that made it unlawful for any dealer to sell the above class of goods without a written permit for each purchase, signed by the mayor, chief of police or marshal of your town.

Another provision in this bill whereby a complete record is kept of the name, age, occupation and residence of the purchaser as well as the number, make, &c., of the revolver sold, we are inclined to favor. We are aware that some of our members do not think we should handle this class of merchandise. Several Southern cities have laws that practically prohibit the sale of revolvers by their own merchants. The result has been the enormous increase of mail order house sales of these goods, which no State law can affect or control.

Lawful and peaceful persons provided with no weapon of defense of home or person are at the mercy of the criminal element, who find no difficulty in providing themselves with firearms. Compelling citizens of a State to send away for any legitimate line of goods is educating them to become catalogue house buyers with its corresponding evil effects on all local business.

Paint Law Should Be National.

These objections will also apply with more or less force to the proposed paint legislation, which should be discussed in this convention. It seems to the secretary that provided this class of legislation is necessary and desirable it should come in the form of national laws after the form of pure food regulation, which will control the business of the catalogue houses, who must be recognized as our most unprincipled and demoralizing competitors.

Protection Against the Dead-Beat.

There is not much chance for any garnishee bill in Indiana that would be of any decided benefit. It is up to the business men to provide safeguards against the dead-beat, and they can do it best by strict revision of the old-time, loose, careless, credit system, which has bankrupted many a promising institution. While we do not believe a strictly cash business is practical nor necessary, we do believe that it is possible to establish uniform and definite selling terms, and by strict adherence to these terms educate our customers to expect and comply with them just as generally as we do in buying goods of manufacturers and jobbers.

It might be practical to have a committee canvass this subject and recommend to the Hardware trade of our State terms and conditions of credit sales that would remove many of the objections and losses that now prevail.

Chicago Requests for Information.

Our members are frequently requested to furnish reports as to the responsibility and reputation of farmers and others living in their vicinity. Nearly all of these requests come from Chicago, and it is hardly necessary to warn you that such information as you or your bank might furnish will be used to the damage of your local trade.

No matter whether such inquiries pretend to come from a bureau of insurance source it is wise to throw them in the waste basket, or, better still, send them to your secretary for investigation. It will be to your own interest to warn your local banks and your Postmaster against these imposters.

Hardware Mutual Fire Insurance.

Our Hardware mutual fire insurance companies require that a Hardware dealer must be a member of his State association. In a very few cases policies have been issued unintentionally to nonmembers. When we discovered this fact we notified the dealers, and they at once joined our association.

I would strongly urge this convention to vote emphatic approval of the stand taken by our Hardware mutuals in confining insurance strictly to association members in good standing. The Hardware mutuals were created by the Hardware association for the protection, benefit and advantage of its members. They surely are fulfilling their mission. Wonderful as their record has been it is still possible and within our power by careful watchfulness and precaution to further reduce our fire losses.

Indiana has within the last two years more than doubled the amount of policies in the mutuals, and at this time has policies in the Hardware mutuals to the amount of about \$3,000,000, and these mutuals will save our members this year over \$27,000, basing the estimates upon the regular old line fire insurance rates. We have had several fires, and all losses have been promptly and satisfactorily adjusted.

CONVENTION NOTES.

At the opening session of the convention a beautiful gold mounted, ivory gavel, suitably inscribed, was presented to President Creed by C. B. Frame, on behalf of his friends in the association. Mr. Creed's popularity and his own warm feeling for the association and its members were universally remarked. In responding to

the gift, he expressed his appreciation of the loyal support that he had received from the members of the association and many others in the trade, not forgetting the traveling men, to whom he paid a high tribute.

Daisy B. Adams, representing the Omaha Lightning Rod & Electric Company, an excellent cornettist, who has been prominent at many State conventions this year, led the singing at several sessions, and also played solos at the vaudeville entertainment. She was presented with a handsome bracelet as a token of appreciation of her assistance.

Prizes were offered for the four best exhibits at the Hardware show, to be awarded by vote of the association members.

Through the thoughtfulness of President Stebbings of the National Association the convention recognized inauguration day by sending to President Taft on the morning of March 4 a telegram of congratulation and good wishes for his administration.

The only prearranged entertainment feature was a vaudeville show, held in the convention hall Wednesday evening. An invitation to be present was extended to the ladies, many of whom attended and enjoyed the affair. Other entertainment included numerous informal dinners and theater parties, several excellent theatrical bills being offered in town during the week.

The local jobbing house of Layman-Carey Company had a fine exhibit at the Hardware show, where its customers were entertained and served by a large number of representatives in attendance. Many also visited its fine establishment not far from the exhibit hall.

Many members who were absent sent letters of regret, explaining why they were unable to come to Indianapolis, expressing their continued interest in the association, and their best wishes for a successful convention. An especially good letter was read from O. T. Higgins & Co., Franciscville, whose attendance was prevented by a bad fire.

Reference has been made in the foregoing report to appreciation felt by the Indiana members for the liberal support of the Van Camp Hardware & Iron Company. The company occupied a large space at the Hardware show, where it maintained an information booth, post office and other facilities for the convenience of customers, including free stenographic service. The place was decorated with advertising matter, referring to prominent lines handled by the house, but no goods were shown. Almost every one, however, visited the company's establishment, which was reached from the exhibit hall by a special free automobile service. Here in the spacious display rooms and galleries above the main office were shown an extensive line of seasonable goods attractively arranged.

A feature of the Hardware show was the elaborate exhibit of E. C. Atkins & Co., Indianapolis, who had their usual commodious space between the main entrances of the hall. The booth embodied a representation of a store building with a full size show window, which was effectively dressed with the company's goods, as was also the balance of the booth. A large force of representatives was always in attendance to meet trade and extend an invitation to visit the company's plant, an opportunity which is taken advantage of by many new members every year. Since the close of the convention it has been announced that E. C. Atkins & Co.'s exhibit was awarded first prize by vote of the members of the association.

HARDWARE EXHIBIT.

This year's Hardware show was the largest that the Indiana Association has ever had, numbering close to 150 exhibits. It was installed, as usual, in Tomlinson Hall, a building not far from the hotel and the convention hall, and was thronged with visitors during all the open

hours. It was strictly closed during the business sessions. The main floor of the hall is not large, but it has wide corridors and galleries and a large stage, all of which were fully occupied. The exhibits were of a high order, and covered a wide range of goods, although Vehicles, Stoves and Paints were perhaps predominant.

For the success of the show, the greatest credit should be accorded to the committee in charge, headed by C. E. Hall, Indianapolis, who was faithfully assisted by A. De Prez, C. B. Frame and O. E. Lang. Following is a partial list of the exhibitors, the lines shown and the representatives in charge:

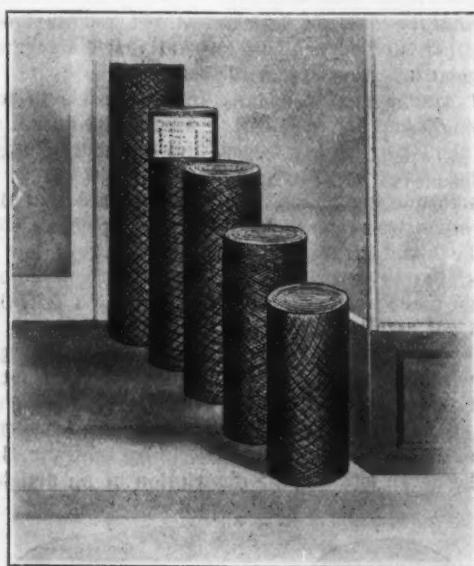
- ALLITH MFG. COMPANY, Chicago: Reliable Round Track Door Hangers. Represented by I. A. Sibley, Jr.
- AMERICAN STEEL & WIRE COMPANY, Chicago: American, Elwood and Royal Fence. Represented by J. A. Boyd, S. L. Soule, L. Harter, H. H. Salusbury and J. M. Thomas.
- E. C. ATKINS & CO., Indianapolis: Saws of all kinds, Saw Tools, Braces, Grass Hooks, Corn Knives, Miter Boxes, Trowels, Hack Saws, &c. Represented by F. Wells, G. W. Dunnington, H. T. Benham, B. Mills and others.
- BLACK SILK STOVE POLISH WORKS, Sterling, Ill.: Stove Polish. Represented by T. G. Beard and L. K. Wynn.
- Boss WASHING MACHINE COMPANY, Cincinnati, Ohio: Washing Machines. Represented by J. M. Cook and J. J. Bluemlein.
- CANTON ART METAL COMPANY, Canton, Ohio: Sheet Metal Cellings, Sidings, &c. Represented by W. W. Clark, W. H. Gardner and H. W. Baker.
- CARBORUNDUM COMPANY, Niagara Falls, N. Y.: Sharpening Stones, &c. Represented by G. N. Allen, G. E. Dresser and C. G. Emery.
- COLDWELL LAWN MOWER COMPANY, Newburgh, N. Y.: Lawn Mowers. Represented by G. A. Metcalf and J. T. Bullen.
- DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by M. H. Snyder.
- FULLER-WARREN COMPANY, Milwaukee, Wis.: Stewart Stoves and Ranges. Represented by C. D. King, J. L. Potter and D. J. Brennan.
- HAYES PUMP & PLANTER COMPANY, Galva, Ill.: Pumps. Represented by J. D. Fagan.
- KOKOMO STEEL & WIRE COMPANY, Kokomo, Ind.: Pioneer Wire Fence. Represented by R. J. Barbour and S. W. Jarvis.
- KRAMER BROS. FOUNDRY COMPANY, Dayton, Ohio: Cement Tools, Lawn Vases and Specialties. Represented by E. V. Gilbert and R. D. Fitzgerald.
- LASHER MFG. COMPANY, Davenport, Iowa: Spring-In Handle Pot Covers and Cabinets, Plate Scrapers, Double Fry Pans, Roasters, Mashers and Shredders and other Specialties. Represented by E. C. Greeley.
- LAWRENCE BROS., Sterling, Ill.: Door Hangers and Rail, Strap Hinges, Steel Butts and other Hardware. Represented by C. G. Leachman.
- LENNOX FURNACE COMPANY, Marshalltown, Iowa: Lennox Furnace. Represented by S. P. Britt.
- L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis.: Furnaces, Boilers, Registers and Supplies. Represented by W. F. Brien.
- NEY MFG. COMPANY, Canton, Ohio: Hay Carriers, Barn Door Track and Hangers and Hardware Specialties. Represented by A. M. True, F. W. Miller, Jr., and J. M. Mobley.
- ONEIDA COMMUNITY, Oneida, N. Y.: Community Silver and Dealers' Window Display, embodying Game Trap. Represented by F. H. Primo, A. Clark and W. L. Wingate.
- PERFECTION MFG. COMPANY, Columbus, Ohio: Mortising Machine. Represented by G. W. Campbell.
- PHILADELPHIA MADE HARDWARE: Elaborate display of the lines of Henry Disston & Sons, Enterprise Mfg. Company, Fayette R. Plumb, Inc., North Bros. Mfg. Company and Miller Lock Company, all of Philadelphia. Represented by Chas. Castien.
- PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Pittsburgh Perfect Fence, Single Wire Stretcher, Wire Nails, &c. Represented by E. S. Jordan, W. H. Cottrell and G. W. Fisher.
- SCHNEIDER & TRENKAMP COMPANY DIVISION, Cleveland, Ohio: Reliable Stoves and Ranges. Represented by J. R. Cunningham.
- SHELBY SPRING HINGE COMPANY, Shelby, Ohio: Shelby Chief Floor Hinges and Builders' Hardware. Represented by R. E. Murray and L. D. Malone.
- SYRACUSE CHILLED PLOW COMPANY, Syracuse, N. Y.: New Gang Plow. Represented by W. S. Kirby.
- Voss Bros. MFG. COMPANY, Davenport, Iowa: Washing Machines.
- WARD FENCE COMPANY, Decatur, Ind.: Lawn Fence and Gates. Represented by J. E. Lawrence.
- WHITE LILY MFG. COMPANY, Davenport, Iowa: White line of Washing Machines. Represented by A. F. Victor.

JOHN D. POWERS, who has had charge of the Hack Saw department of Henry Disston & Sons, Philadelphia, for some years past, has resigned his position, to take effect March 31.

The Hardware firm of Fitzgerrell & Hudelson, Benton, Ill., has been succeeded by Fitzgerrell Brothers. The new firm, besides making important improvements in the interior store arrangements, has added to the regular Hardware line, Furniture and Implements.

FEATURING POULTRY NETTING.

THE accompanying diagram illustrates a method of calling attention to stock of Poultry Netting employed by White, Van Glahn & Co., 37 Barclay street, New York. The rolls were stacked in the order of size just outside the entrance of the store, forming a progression which always fills the eye and suggests completeness of stock. A stenciled sign was prepared giving all required



Rolls of Poultry Netting in Doorway.

site information regarding the Netting and the selling price for every width. As this sign is hardly large enough to be legible in the illustration it is here reproduced separately.

Galvanized Poultry Netting

2 in. Mesh. No. 19 Wire.

2 ft. roll.....	\$1.47
3 ft. roll.....	2.18
4 ft. roll.....	2.93
5 ft. roll.....	3.65
6 ft. roll.....	4.39

It is safe to say that no suburbanite in need of Poultry Netting could get by this display without noticing it and appreciating the convenient form in which the prices were presented.

Weed Destroyer.

THE American Steel & Wire Company, Chicago, Ill., issues a 16 page illustrated descriptive pamphlet entitled "Eradication of Farm Weeds," this being accomplished by means of a new byproduct, sulphate of iron, which costs little and may be sprayed on with customary outfits; handling a 20 per cent. solution at the rate of 20 to 100 acres of grain in a 10-hr. day, it is stated. The chemical, in crystals, is put up in barrels, bags or bulk for mixing with water, and the best work is effected in the proportion of 52 gal. per acre. A table of costs in bags of 200 lb. and 100 lb. units in carloads, delivered, in, for instance, North and South Dakota, Minnesota, New York, Delaware, New Jersey, Pennsylvania and Rhode Island, affords a good basis for consideration, the list prices ranging between 76 cents and \$1.08 per 100 lb. in 200 lb. bags, the 100 lb. unit averaging about 5 per cent. higher. This patented production is used to exterminate stink weed, wild mustard and radish, king-head, elder, dandelions, cocklebur, Canada thistle and similar pests, a comprehensive idea of the subject in detail being conveyed by illustrations and text.

Gates-McIntosh, Inc., Marysville, Cal., will open a new Hardware, Mining Supply, Vehicle and Implement store about March 15.

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SOUTH DAKOTA RETAIL HARDWARE ASSOCIATION.

The fourth annual convention of the South Dakota Retail Hardware Association was held at Huron, S. D., last week. While the attendance was not especially large, numbering about 75 out of a total membership of 200, the members present accomplished much good for themselves and for the cause of Hardware associations generally. The Hardware exposition held in conjunction with the convention attracted much attention, and, as appears from the list of exhibitors given elsewhere, included quite a large number of displays.

The convention opened Tuesday afternoon, March 2, in the rooms of the Commercial Club, with President E. J. Gregory, Alexandria, in the chair. Harvey J. Rice, president of the Commercial Club, welcomed the members, and the response on behalf of the association was made by Thomas C. De Jean, Plankinton, a veteran merchant, who took occasion to refer to the early days of the Hardware trade and to the evolution in business.

Convention Committees.

President Gregory appointed the following committees to serve during the convention:

NOMINATING: L. J. Enlboe, Woonsocket; O. W. Anderson, Lane; P. J. Odell, Montrose; B. A. Tibbits, Clark; A. W. Donaldson, Yankton.

AUDITING: W. C. Webster, Mitchell; John Walmsuth, Spearfish; John Van Metre, Letcher; George Small, Ashton; Mr. Nisson, Artesian; Mr. Smith, Bridgewater.

GRIEVANCES: R. J. Odell, Montrose; F. J. Chamberlain, Frederick; A. K. Loe, Pierpoint; C. F. Cox, Alcester; E. E. Hoppling, Brentford.

TRANSPORTATION: W. A. Waibel, Huron; H. A. Spooner, Huron.

NEXT MEETING PLACE: L. P. Rummell, Sioux Falls; B. C. Wattson, Chamberlain; J. W. Chase, Parker; J. S. McKee, Frankfort.

President's Address.

E. J. Gregory, Alexandria, in his annual presidential address referred briefly to some of the work of the national convention at St. Louis last year and also mentioned some of the things accomplished as a result of association effort. He touched on the necessity of defeating parcel post legislation, and on the great importance to merchants of good roads and inland waterways. In concluding he said: "If you want to know what more our association has done, just take out an insurance policy in one of our sister State associations until such time as we have an insurance company of our own, and when you get back from 40 to 50 per cent. of your premium annually you will begin to sit up and take notice that the retail Hardware association is on earth for your good." Mr. Gregory recommended that arrangements be made for a ladies' auxiliary to the association, the body to meet annually and in conjunction with the convention of the association.

Mutual Insurance.

D. H. Evans, Tracy, Minn., vice-president of the Retail Hardware Mutual Fire Insurance Company of Minnesota, delivered an address on "How to Save One-Half of Your Insurance Cost." South Dakota has no fire insurance company of its own, and the members were much interested in Mr. Evans' explanation of the workings of the plan in Minnesota. After his talk he was asked many questions bearing on the subject. He said that it is the experience of the Minnesota Association that only 30 per cent. of the fires which damage Hardware stores start therein. This he pointed out to show the comparative safety of Hardware stores and stocks as insurance risks.

Carefulness on the part of dealers is encouraged by the Minnesota company, Mr. Evans explained, because part of the premium is paid back to policyholders if the fire losses are not too great. Never since the organization of the company has less than 25 per cent. of the premium been paid back, and during the last two years the amount has been 50 per cent. The cost of carrying on the business is only 10 per cent. of the premiums received. The remaining 40 per cent., after fire losses are paid, is converted into a reserve fund.

Newspaper Advertising.

One of the topics suggested by the Question Box was newspaper advertising. B. G. Wattson, Chamberlain,

said that he did not look for direct results from his newspaper advertising, but he said that he regarded it as a good investment, just the same.

"I confine myself usually to one article in my advertising," said Mr. Wattson. "I never let an ad. run in more than two weekly issues, and generally change the reading matter every week."

As to quoting prices, Mr. Wattson said that he had tried advertisements with and without prices. He said that he had advertised an article at a very low price, having the price printed in large letters, but that he had not made a sale as the result of it. "I felt, though, that I got results indirectly," he said.

O. W. Anderson, Lane, said that he cannot get results without quoting prices, and that he would not think of running an advertisement without mentioning prices. He said that the catalogue houses make the price of their articles as prominent as the descriptive matter. He said that he never left out the description of an article, and



F. I. PIXLEY.



B. G. WATTSON.

that he tried in his advertising to use the same selling arguments that he would use in his store.

President Gregory said that price quoting had won results for him. He said that he had used this method of advertising for two years with success. This year he sold out his entire stock of base burners by giving prices in big, black letters.

J. H. Roper, Parker, thought that quoting of prices might start a price cutting war in a town.

The advisability of using services that furnish printed advertising forms and circulars was also discussed, and it was the opinion of several that the local printer should not thus be deprived of business.

Giving Premiums.

The question, "Does it pay to give premiums to customers trading out a certain amount and paying cash?" brought forth an interesting discussion and the experiences of several with premiums were related.

"I don't believe it pays in any business to offer stimulants," said J. H. Roper. "It becomes only a question of time when the dealer cannot keep it up, and as soon as he drops the giving of premiums his trade falls off, too."

"I once went into the dish business as premiums," said F. I. Pixley, Montrose. "Another man who was selling dishes offered granite ware as premiums. Both of us soon saw the error of our ways and we swamped premiums. I do not believe a Hardwareman, if he gives a premium, should select an article advertising another class of business."

It was the opinion of several that rather than give

premiums they would present a good Knife or a Whip, or some other such article to a customer at the time he pays his bill.

Does a Typewriting Machine Pay?

Another question was, "Is it a profitable investment for a small dealer to spend \$50 to \$100 for a typewriter?"

Several said they could not get along without a typewriter and that the present day business methods demand its use, while others said that they hadn't enough work to employ a stenographer and couldn't learn to operate the machines themselves.

Wire Cloth Remnants.

Various questions of store arrangement were discussed, and Nathan Roberts, Omaha, Neb., told of his system for handling Wire Cloth. He said that he had saved considerable money by taking care of remnants, filing them away so that they could be got out when needed, instead of throwing them off into a corner.

The Care of Axe Handles.

Where and how to keep Axe Handles to prevent them from becoming crooked was another subject discussed. It was declared that Axe Handles are almost profitless stock owing to the deterioration caused by the wood getting crooked.

One member said that he found the suspending of the Handles from the ceiling an excellent plan, and another stored most of his Handles in the cellar.

Another said that white bores destroyed many of his Axe Handles. He had found gasoline the most effective to battle with this pest.

Galvanized Tubs Troublesome.

How to handle Galvanized Tubs was a problem that was not satisfactorily settled, even after a lengthy discussion. One merchant said that he placed his Tubs edgewise in a rack, but even that took up considerable space. Another said that he kept his stock in a back room, and that when he wanted a certain size of Tub that particular one was invariably on the bottom, and it required time and trouble to extricate it. No one seemed to have devised any ideal method for storing these goods.

Profit in Window Display.

"Does it pay for the dealer in the small town to make window displays?" proved an interesting question. Secretary H. E. Johnson said that he placed 120 Saucepans in his window, marked them at 10 cents each, and sold the entire lot in six hours. He said that it probably would not pay the dealer in a place of only 300 or 400 population to do elaborate window decorating, but that the merchant in towns of larger size should certainly not neglect this important detail of his business. Mr. Johnson said he believed that prices should be marked in big letters on cards.

"Your show window is an index to the man behind the counter," declared Mr. Roberts of Omaha. "The care of show windows is an index to the city itself. No advertising costs so little and gets better results for the time expended."

Dr. C. B. Morrell of the Sheldon School of Salesmanship, Chicago, said that the simple window decoration is the best and most effective. Too much or too many kinds of goods should not be used. He advised using in window displays the goods that are generally tucked away in some corner of the store.

D. D. Gross, Yankton, told how to make a good Paint for making window cards. His recipe was as follows: Take a quantity of the best dry lampblack and mix with it the contents of a bottle of glue or mucilage. Work well together, and then when the mixture is to be used add a little water, and the result is a black paint that will give a dull effect. The same result can be obtained in white, he said, by using zinc white and in red by using vermillion red.

Exchanging Lists of Delinquent Customers.

In reply to the question, "Is it unlawful for an association to exchange lists of delinquent customers?" E. G. Felix, Willow Lake, said that when he had been in business in New York State such lists had been published and had been of much benefit to the merchants.

D. D. Gross of Yankton, also said that he knew of instances where the publication of such lists had resulted successfully.

Permanent Record of Credit Accounts.

In discussing bookkeeping systems it was the opinion of several dealers that permanent records should be made of all credit accounts and the records preserved and the record not destroyed when the account is paid, as it was said is done in some of the modern slip systems.

Parcel Post.

D. H. Evans, Tracy, Minn., made an eloquent and convincing argument against parcel post legislation. He said:

If parcel post is going to increase the civilization of this country, and afford better conditions generally, I believe we ought to have it. But if it is not going to be a genuine benefit to the country, I believe that we should not have it. The system is going to cost more money than the country is going to get out of it. Who is going to pay? The vast majority who do not use it at all will pay for it.

Commerce is the life blood of the small city and village. If you take away this commerce you are destroying hundreds and thousands of the sources from which the farmer receives his education. You are destroying the places where the farmer markets his products. You will reduce the value of the farmer's land when you take away his market. It is a good market as much as the fertility of the soil that makes the farm's worth.

Mr. Evans emphasized the civilizing influence of the small towns and said that the future of the nation depends upon their prosperity as such, if not more, than it does upon the larger cities.

He urged the members of the association to do all in their power to fight the parcel post, but added: "If we don't lift higher than a mere dollar basis we are bound to lose."

Nathan Roberts, Omaha, Neb., said that he believed that a campaign of education among the farmers should be started.

E. B. Zimmerman, Lincoln, Neb., said that in his State the most effective argument among farmers for home trade was that the value of the small towns as marketing places would be destroyed if farmers persisted in sending their business to the big centers.

Mail Order Competition.

One of the tricks of the catalogue houses was told by Mr. Evans. He said that he saw a certain article advertised in a mail order catalogue for less than he could buy it of his jobber, and out of curiosity he sent the price at which it was listed to Chicago. In return he received the article ordered and with it a slip reading. "You owe us," and the amount, which was \$1.14. The catalogue house made the explanation that the price of the article had gone up since the catalogue was printed and that under the conditions of sale the house was entitled to the extra amount. Mr. Evans urged merchants to warn their customers against this scheme.

"Will the farmer give the home dealer the preference in buying, all things being equal so far as the mail order houses are concerned?" asked a member.

President Gregory said that there were some farmers who are "sore" on the retail merchants and would not buy from them in any event, but that most of the farmers would favor the local dealer if he could meet catalogue house prices.

E. J. Mannix, Sioux Falls, said that the farmers are more prejudiced against retail merchants than the average dealer thinks.

Thomas C. De Jean, Plankinton, said that all, or nearly all, of his customers would come to him if he met mail order house prices on everything.

"How should we treat manufacturers and jobbers who sell to catalogue houses?" was asked.

"Publish lists and cut out those who sell to catalogue houses," was the only suggestion offered.

It was pointed out that it is difficult to obtain accurate lists.

"Can good results be obtained by letter writing and personal follow-ups?" was asked.

Mr. Evans said that he kept a record of all prospects,

particularly on buildings to be erected. His employees also were instructed to bring in pointers. His stenographer, he said, kept a record of these things, and letters were sent out. If no reply was received another letter was sent out about two weeks later.

To mail order purchasers Mr. Evans sends letters asking them to compare his prices with those of the mail order houses. One effective argument, he said, was to point out to catalogue buyers that in the catalogues both the cheapest and most expensive articles of any one kind, as, for instance, Stoves, received the same flattering descriptions.

"I try to get people into my store," said Mr. Evans. "When I have done that it is up to me to do the rest."

Officers Elected.

Officers for the ensuing year were elected as follows: PRESIDENT, F. I. Pixley, Montrose.

FIRST VICE-PRESIDENT, George V. Ayres, Deadwood.

SECOND VICE-PRESIDENT, Thomas C. De Jean, Plankinton.

SECRETARY, H. E. Johnson, Redfield (reelected).

TREASURER, B. G. Wattson, Chamberlain, (re-elected).

EXECUTIVE COMMITTEE: E. J. Gregory, Alexandria; E. D. Hawkins, Vermillion; B. E. Tibbits, Clark; J. P. Rummell, Sioux Falls; D. D. Gross, Yankton; E. C. Warren, Pierre; C. A. McArthur, Aberdeen.

DELEGATES TO THE NATIONAL CONVENTION: F. I. Pixley, Montrose; H. E. Johnson, Redfield; E. J. Gregory, Alexandria.

Yankton Next Year.

The Location Committee did not recommend any place for the 1910 convention, preferring to leave the choice to the convention as a whole. The committee did recommend, however, that no permanent place of meeting be selected at this time. Some of the members favored the selection of two cities and alternating the convention between the two. Others favored the naming of one convention city and holding convention there every year.

Sioux Falls and Yankton delegations came prepared to win the next convention for their own city. Sioux Falls members wore buttons which read: "Why Not Sioux Falls in 1910." Yankton members had ribbons inviting the members to return to Yankton, "The Mother City of South Dakota." Large cards had also been placed in and about the convention hall boasting for Yankton. Invitations from the Mayors or commercial clubs of Sioux Falls, Yankton, Huron and Mitchell were read, after which the convention proceeded to vote. On the fourth ballot Yankton received a majority of the votes and was declared the convention city for next year.

Resolutions.

In addition to resolutions of thanks and appreciation the following were adopted:

Resolved, That we are unalterably opposed to the establishment of the parcel post in this country for the reason that it is class legislation and paternalism on the part of the Government; and be it further

Resolved, That we request our membership personally to disseminate information as to the results of passing such a law and instruct our representatives to work against it.

Whereas, The existing evils emanating from illegitimate and piratical competition are aided and abetted by certain jobbers and manufacturers; therefore be it

Resolved, That this association go on record and take issue with such concerns and that we will not conserve their interests.

Whereas, Nearly all of our Hardware journals accept advertising contracts from manufacturers who sell and supply goods to mail order concerns; be it

Resolved, That it is the sense of this association that said journals are not serving the best and permanent interest of the legitimate Hardware trade in catering to this class.

We hereby urge the members of this association to patronize Hardware mutual fire insurance companies of our neighboring States.

A motion that the wives of members be admitted as auxiliary or honorary members was carried by acclamation.

On motion the yearly dues for traveling salesmen as honorary members of the association were reduced from \$5 to \$1.

Secretary's Report.

In his interesting annual report, H. E. Johnson, Redfield, recommended the selection of a permanent conven-

tion city, and the appointment of an Advisory Committee, consisting of the three last ex-presidents. We give the following extracts from the report:

Our membership has enjoyed a steady growth the past 12 months, and were it not for the fact that we have so many business changes among the personnel of our dealers, our lists would show greater growth, but in spite of the losses we sustain each year through these changes, our membership has made steady growth until to-day we have the largest paid membership since our organization.

The growth of the membership is due partly to the good work rendered us by the Hardware salesmen, and in order that we may receive the stronger co-operation of these gentlemen I recommend to this convention that all salesmen of Hardware, Stoves, and kindred lines, be made honorary members of our association, and that they pay \$1 per year for their membership, which amount will just cover their membership in the national association, and subscription to the *Bulletin*.

Complaints.

There have been but few complaints the past year, and with one exception all were of minor importance and easily adjusted. One, however, was of a serious nature, and took an endless amount of correspondence, covering a period of four months, before finally adjusted.

Parcel Post.

In almost every letter sent out the subject of parcel post has received more or less attention, and we can congratulate ourselves that up to the present time no legislation along this line has been enacted, and I respectfully recommend that some action be taken at this time on parcel post, and also secure from our members a pledge to assist the secretary if called on in case of an emergency.

A chain is as strong only as its weakest link, and the influence of our association is felt only in the loyalty of its members when called on in special cases. It has been my endeavor to outline the workings of parcel post, and to furnish you with as much information as possible in the monthly letters, and now we ask your hearty support and co-operation on a question of vital interest to every retail merchant of the country.

I might add, and with all due respect to other retail and business organizations, that were it not for the National Retail Hardware Association, we would to-day have upon our statute books a Parcel Post law.

Hardware Exhibits.

The work of securing exhibits for this convention was commenced last fall, and was continued almost to the present time. Much information was gained from our exhibit at Aberdeen last year to the advancement of our exhibit this year, and I am fully convinced that the larger and more attractive the exhibits, the larger and better the convention, and I urge those present to devote as much time as possible to the exhibits, and buy from the lines represented, as they deserve your support and patronage.

Hardware Insurance.

At the Aberdeen convention I was appointed a member of the committee to investigate the subject of a Hardware insurance company, and while I was very enthusiastic at that time, I have undergone a complete change of heart, for the present, at least.

With mutual companies conducted under the auspices of our sister State associations giving our members insurance for one-half the old line company rates, and inasmuch as all Hardware dealers can take advantage of this insurance by becoming members of our association, and as it would be years before we could get a company on a safe basis, it seems to me that we can gain more by urging those outside our association to join by holding out to them the low rates as offered by several companies to association members only.

Association Finances.

During the year \$1568 was received from all sources. Deducting \$1154.64, the total amount of our disbursements, we have a balance of \$413.36, which added to \$305.34, the amount on hand at the beginning of the year, leaves a balance of \$718.70 in the hands of the treasurer at the present time.

From the National Association.

Nathan Roberts, Omaha, Neb., a member of the Executive Committee, brought the greetings of the National Retail Hardware Association. His address was interesting and stimulating, and listened to with interest and appreciation. Mr. Roberts spoke, in part, as follows:

This is an era of organization. Necessity demands and compels it. In no other way or manner can we combat the powers that are arrayed against us. As individuals we are helpless; as a whole we are powerful. We have the mail order syndicates, the unscrupulous jobber, the Post Office Department, Senators and Representatives, who with only one eye open to the people's welfare would legislate for the

classes instead of the masses, the illegitimate competitor and his nefarious ways. All these and many more have to be compelled to do right by all men.

Our Work Is a Mighty One.

but right will prevail. Commerce has made a condition that threatens to put us out of business, to lay waste our beautiful towns and villages, to destroy our churches and schools, and to fill the congested centers with crime and criminals, and to even destroy the farm as an asset of value to those who will take our places when we have crossed the Great Divide.

But certainly, somewhere and somehow, commerce will open up a way of escape for us. The strife is yours, buckle on the armor of citizenship, and fight manfully for what is now yours by right of possession, and we will win along these lines if it takes us many summers.

Combating Mail Order Houses.

Speaking of one of these destroying agents, the mail order house, which does not contribute one cent toward the maintenance of our schools, churches, or good roads tax, I am glad to say that they are meeting their Blucher. Hundreds of dealers have met their competition successfully, and hundreds more are getting wise to the situation. Study their methods and plans, meet fire with fire, beat them at their own game; never despair; there are more and clearer brains in the West than anywhere else. Those among the jobbers who are our friends are at last alive to the needs of the hour, and are rallying to our standard.

The Merchandise Post

is being fought by our national association for every inch of vantage ground, and in my opinion will never pass the two houses and become a law. Let me tell you what the Nebraska men have pledged themselves to do. Each member at the convention promised when he got home to be a committee of one to explain the real truth of the matter to his farmer customers, and get them to write personal letters to their Senators and Representatives, protesting against parcel post legislation, and they will do it, and it will have a mighty influence at Washington. Friends, go and do likewise. It is the first and best thing to help us win out. If you will all do this and do it now, and if every affiliated State in the West will do the same, it will be safe to assert that no legislation along this line will be enacted in the next Congress.

The National Body Has Accomplished Much

since first organized, in 1901. Then we had six affiliated States; now we have 33; then we had less than 750 members, now we have over 13,000; then we were in debt \$600; to-day we have over \$15,000 in our treasury. In 1901 it cost us \$5.11 to mail the *Bulletin*; in 1908 it cost us over \$1000.

I am also proud of the fact that harmony and good will have prevailed in the national meetings. Men are chosen as leaders and officers who have made a success as presidents of their State associations. No machine or State politics is tolerated, but those who can best work and best serve are chosen always, and I predict that as long as this policy governs our actions upward and onward will be our trend.

If time would permit me we might take up the many salient points gained for us by our national association, but you who read the *Bulletin* and other trade papers are familiar with them, and the bearing upon our different interests. The work done along certain lines is bearing healthy fruit. The strenuous efforts of the mail order houses to drive their trade into new, untried and impractical fields bears out my assertion. There are many things occurring at this time which indicate that they are awake to the situation, and are straining every nerve to regain their lost prestige. As hardware men we are to be congratulated on the splendid array of hardware journals which are all loyal to our interests.

And further, we owe the manufacturers and jobbers who are loyal to us a debt of gratitude, and we should support their interests in every way possible. We must show our appreciation in season and out of season, for, without their hearty co-operation and practical help, success can only half be assured.

Other Addresses.

C. E. Wright of the *Hardware Trade*, Minneapolis, read an interesting paper on the subject of parcel post, prepared by O. L. Schutz, manager of that journal, who, owing to illness, was unable to be present at the meeting.

E. J. Mannix, publisher of the *Commercial News*, Sioux Falls, talked briefly on the mail order problem. He said that on a recent trip to the East he found that merchants were suffering more from the effects of mail order competition than the Hardwaremen of the West. He referred to a new catalogue got out by a Chicago mail order concern, in which prominent announcement was made that "we pay the freight."

Dr. C. B. Morrell, representing the Sheldon School of Salesmanship, Chicago, delivered an address on the sub-

ject of "Scientific Salesmanship," in which incidental reference was made to the manner in which the school applies the principles of salesmanship as enunciated by him.

CREDIT VERSUS CASH.

A suggestive paper on cash versus credit system was read by L. J. Enlboe, Woonsocket, in which he described his method of putting his business on a cash basis. His paper was substantially as follows:

The subject you have assigned to me is one of great importance to business men engaged in retail business in any line. The careful business man takes an inventory of his stock each year, and in that inventory he lists all of his outstanding accounts and notes that may be due him from his customers, and then is the time he makes the discovery whether or not he has made any money since his last inventory.

Should he figure on his outstanding accounts being worth to him the 100 cents on the dollar and afterward realizes they net him only 75 cents on the dollar, he will stop, scratch his head, and say to himself: "Where is the profit I figured to make?" He will then begin to realize that the year's trade has not been worth as much to him as when he first took the inventory.

Loss on Book Accounts.

For example, should his inventory show that there was \$3000 outstanding on book accounts, and he planned to collect this, he will find that should he employ some one to collect it for him it will cost about \$300, and during the time of collecting this amount, he may need the money represented by the accounts outstanding, to replenish his stock. Should he have to go to the bank and borrow it, the interest on the borrowed money would amount to \$300, provided he borrowed the money for one year. If he have the money of his own it is worth the same interest as he would have to pay should he borrow it.

Then, another item, unless a merchant is very careful, there is a loss of 20 or 25 per cent., through the persons who forget to pay, or never pay, after credit has been given them.

Besides the losses above stated in the matter of collecting these outstanding book accounts, there is the loss of time, postage, stationery, charges that have been overlooked, and, more than all, the loss of customers by extending credit, for, frequently, after crediting customers for large amounts some of them leave your place of business and go somewhere else, while if you should make them pay their bills, or not extend credit to them, you would hold them as customers.

A Year's Experience with Cash System.

About one year ago I placed my business upon a cash basis, and you may like to know whether or not I have been satisfied with my year's trade upon that basis. I wish to say to you that I have been entirely satisfied, and heartily recommend to each of you that you place your business upon a cash basis as soon as you can, for the reason that after you have once tried it you will approve it as I do now.

You may ask: "What do you do with persons who may want some credit, and who are absolutely good, and will pay their bills promptly?" And in reply, I will give you the plan or system which I have followed. Should a customer say to me that he wanted to buy some goods on credit from time to time during the season

I Sell Him a Coupon Book.

and I have these books arranged from \$2 to \$25, and when the customer receives the book I have him execute a note due in 30 days without interest for a book from \$2 to \$10, and 60 days for \$15 to \$25, for the amount of coupons he receives.

As he buys his goods he presents his coupons for the amount of his purchase, and they are canceled, and if the customer does not pay his note at the end of 30 or 60 days, the note begins to draw interest at 10 per cent., and should he take 60 days to purchase goods to the amount of the note and coupons, he would have credit for 30 days, and the interest on the note would run for 30 days, and neither my customer nor I have been a loser by the system.

Should the customer fail to pay the note at the end of the 30 or 60 days it will continue to draw interest at the rate per cent. fixed, until paid. By this plan the accounts are always settled, and no question will afterward arise or dispute be made.

Customers Gained and Lost.

I have lost some customers by adopting my cash system, some who were good pay, and some who would never pay. I lost nothing by the loss of the customers who would never pay, for the goods they would have purchased during the year and not have paid for I still have in my possession, and I have gained new customers in people who always pay cash and believe they get their goods cheaper from the merchant who sells for cash.

At the end of the year my inventory showed that I took in about \$500 less in cash than I did the previous year, but while a year ago four-fifths of my outstanding accounts were

in book accounts, and only one-fifth in notes, this year the matter was reversed. Four-fifths of the unpaid accounts were secured by notes and the remaining one-fifth was unsecured book accounts, and most of these remained from the year before.

Well Satisfied with Results.

If I were able to express myself fully upon this matter and tell you all of the advantages and benefits derived from this system and the pleasure in doing business with customers upon this plan, I am sure that any who have not tried this system would go home from this convention and change from the credit system to a cash basis, for in doing so I am sure that at the end of a year you would agree with me fully in reference to the results.

Discussion.

A general discussion of the cash system followed. The question was asked of Mr. Eniboe: "What do you do in case of tinshop work or repairing?"

"That works on the same principle as the rest of my trade," answered Mr. Eniboe. "If I am working for a contractor or a man who is building a house, I would ask him as well as any one else to sign a note. Some feel it an insult to be asked to sign notes and leave the store, but even some of those have commenced to come back again. When working for a contractor I usually work with the understanding that when the work is done it is to be paid for either by cash or note."

Mr. Eniboe said that many customers, when told that he did no credit business, would promptly write out a check for the goods purchased.

"Why do customers come back after once having left the store because of refusal of credit?" a member asked.

Mr. Eniboe answered that he tries to sell all of his goods as cheaply as he can and still leave a reasonable profit. By cutting prices too low, he said, the merchant is only cutting his own throat.

R. J. Miller, De Smith, said that in his experience the man the merchant trusts the longest is as a rule the shortest customer. "I make it a rule," he said, "to find out just when I am going to get my money. Six months is the longest period for which I extend credit, unless it be to a contractor who has a continuous account."

Mr. Eniboe was asked as to the disposition he made of the notes he received for goods. He said that he took only good notes, and these he banked if he needed the money. The advantage of obtaining notes, in his opinion, lay in the fact that interest was collectable after 30 or 60 days, whereas interest could not very well be collected on a book account.

One merchant expressed the view that a man is not doing a cash business when he accepts notes in payment for goods. "If you have a poor customer he'll beat you just as quickly on a note as he would if he were on the books," he said.

Thomas C. De Jean held that the system of giving out coupon books was not a good one. If a \$5 book were given to a customer, he said, the amount would be traded out pretty quick and the dealer would be forced to wait 30 or 60 days or even longer for his money. On the contrary, if the customer bought about \$2 worth and it went on the books, the pay would be forthcoming in nearly all cases within two or three weeks at the latest.

One merchant said that he expected to lose interest on the accounts he carried on his books. Another said that his total losses from bad debts during all of last year were only \$26.40.

"How many dealers favor a strictly cash system?" asked J. H. Roper. Only six held up their hands.

It developed that while many of the members would prefer to do business on a strictly cash basis, it is almost an impossibility to get down to that basis in an agricultural State like South Dakota.

That the encouragement of credit business is a menace to the country and that customers should be prevailed upon to pay cash as often as possible was dwelt upon by two or three speakers. It was declared that credit, with many, is largely a matter of habit and that what is needed is not to get business upon a cash basis but upon a business basis.

Thomas C. De Jean said that he had some customers to whom he would rather extend credit than to have them pay cash. They would quibble over the price of an

article, he said, if they intended to pay cash, while if it were charged no question ever was raised about the price.

This statement brought out similar views from two or three other members.

It seemed to be the most general view that a credit business, conducted along the most careful lines, is the most profitable one for the country merchant.

HARDWARE EXHIBITORS.

Following is a complete list of the exhibiting houses with lines covered and representatives in charge:

AMERICAN STEEL & WIRE COMPANY, Chicago: Wire Fencing. Represented by C. A. Baker.

AMERICAN POWDER MILLS, Chicago: Dead Shot Powder. Represented by R. R. Barber.

ATLAS PAINT MFG. COMPANY, Minneapolis, Minn.: Paints and Varnishes. Represented by W. N. Curtis.

AXELRUD BROS. & CO., Huron, S. D.: Favorite Stoves and Ranges. Represented by S. & A. Axelrud.

BURGESS-NORTON MFG. COMPANY, Geneva, Ill.: Wire Stretchers, Steel Hatchets and Miter Boxes. Represented by E. B. Zimmerman.

DE LAVAL SEPARATOR COMPANY, Chicago: De Laval Cream Separators. Represented by W. H. Gilfillan and Arthur Taylor.

DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by Arthur S. Riley.

ECLIPSE MFG. COMPANY: Revolving Nail Bin. Represented by H. E. Johnson, secretary South Dakota Association.

EMPIRE SEPARATOR COMPANY, Chicago: Empire Cream Separators. Represented by John Ford.

FORMAN, FORD & CO., Minneapolis, Minn.: Paints, Varnishes and Brushes. Represented by O. C. Adamson, P. W. Fleming and H. E. Colburn.

FULLER-WARREN COMPANY, Milwaukee, Wis.: Stewart Stoves and Ranges. Represented by C. C. and W. B. Barney.

GLOBE MFG. COMPANY, Perry, Iowa: Quickest Yet Washers. Represented by A. S. Kirby and P. D. Paddock.

GRAND RAPIDS STOVE COMPANY, Grand Rapids, Mich.: Michigan Jet Cone Gasoline Stove. Represented by Charles R. Graham.

HACKNEY MFG. COMPANY, St. Paul, Minn.: Hay Tools and Never Sag Gate. Represented by W. A. Law.

H. W. JOHNS-MANVILLE COMPANY, Milwaukee, Wis.: Asbestos Goods. Represented by W. F. McMillen and H. K. Jones.

GEORGE M. KING MFG. COMPANY, Des Moines, Iowa: Lightning Conductors. Represented by J. W. Edgar, C. A. Rider and J. C. McGovern.

LENNOX FURNACE COMPANY, Marshalltown, Iowa: Torrid Zone Furnaces. Represented by C. E. Doughty.

MCCLELLAN PAPER COMPANY, Minneapolis, Minn.: Building Papers. Represented by H. C. Peterson.

MINNESOTA STOVE COMPANY, Shakopee, Minn.: Coral Stoves and Ranges. Represented by Ed. A. Campbell.

MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.: Sheet Metal Goods. Represented by A. W. McOmber.

MANUEL-SMITH HEATING COMPANY, Minneapolis, Minn.: Smith System of School Heating and Ventilation. Represented by W. F. Kunze and Olaf Oleson.

MAJESTIC MFG. COMPANY, St. Louis, Mo.: Majestic Stoves and Ranges. Represented by P. T. Tendick. Gave away small boxes of cigars.

A. Y. McDONALD & MORRISON MFG. COMPANY, Dubuque, Iowa: Brass Goods and Plumbing Supplies. Represented by P. A. Williams.

MINNEAPOLIS LINSEED OIL PAINT COMPANY, Minneapolis, Minn.: Paints and Varnishes. Represented by E. T. Jones.

MOUND CITY PAINT & COLOR COMPANY, St. Louis, Mo.: Paints and Varnishes. Represented by W. W. Edwards.

L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis.: Registers. Represented by F. J. Hayden.

NATIONAL CABLE & MFG. COMPANY, Niles, Mich.: Lightning Conductors. Represented by G. W. Schmidt and Samuel Luckey.

NORTHWESTERN KITCHENWARE MFG. COMPANY, Minneapolis, Minn.: Economy Colander and Fruit Presses. Represented by W. A. Stromme.

OHIO VARNISH COMPANY, Cleveland, Ohio: Chi-Namel Varnishes. Represented by J. Schwartz.

PARSONS BAND CUTTER & SELF-FEEDER COMPANY, Newton, Iowa: Pastime Washing Machine. Represented by Walter Bones.

PAXTON & GALLAGHER COMPANY, Omaha, Neb.: One Minute Washer. Represented by J. W. Stiver.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio: Cartridges and Ammunition. Represented by G. Adolph Olson.

REED MFG. COMPANY, Newark, N. Y.: Enameled Ware and Tinware. Represented by E. L. Parshall.

RICHARDS MFG. COMPANY, Aurora, Ill.: Grindstones and Door Hangers. Represented by Lawrence Woods.

ROBERTS HEATING & VENTILATING COMPANY, Minneapolis, Minn.: Furnaces, Boilers and Registers. Represented by C. T. Allen and W. W. Spring.

SAGINAW LADDER COMPANY, Saginaw, Mich.: Step Ladders. Represented by O. L. Knox.

ST. PAUL ROOFING, CORNICE & ORNAMENT COMPANY, St. Paul, Minn.: Sheet Metal Goods. Represented by D. B. Johnson and C. W. Howard. Souvenir tobacco pouch.

W. C. SHINN COMPANY, Lincoln, Neb.: Lightning Rods and Lighting Arresters for Telephones. Represented by J. S. McCue and W. D. Badger.

STRAYER & NESBITT, Minneapolis, Minn.: Faultless Malleable

Stoves and Ranges. Represented by W. W. Strayer and P. I. Hoffman.

SUMMIT STOVE COMPANY, La Crosse, Wis.: Summit Stoves and Ranges. Represented by J. C. Elston and G. W. Lay.

TAYLOR & BOGGIS FOUNDRY COMPANY, Cleveland, Ohio: Builders' Hardware. Represented by A. E. Mathison.

UNION METALLIC CARTRIDGE COMPANY AND REMINGTON ARMS COMPANY, New York City: U. M. C. Ammunition and Remington Guns. Represented by W. P. Brown and H. G. Taylor.

UNITED STATES REGISTER COMPANY, Minneapolis, Minn.: Registers. Represented by L. Hoblo.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: U. S. Cream Separators. Represented by C. I. Howe and E. B. Dinsmore.

VICTOR MFG. COMPANY, Leavenworth, Kan.: Wonder Washers and Wringers and Ironing Boards and Racks. Represented by F. J. Tallant and J. H. Field.

VOSS BROS. MFG. COMPANY, Davenport, Iowa: Voss Washing Machines. Represented by George Woodall.

WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: Washing Machines. Represented by A. Nielson.

WATERLOO REGISTER COMPANY, Waterloo, Iowa: Registers. Represented by J. Pfeffer.

WATHENA WASHER COMPANY, Oakland, Neb.: White Cloud and Wathena Washers. Represented by Victor Freed and D. B. Huston.

WHITE LILY MFG. COMPANY, Davenport, Iowa: White Lily, White Daisy and other Washers. Represented by Theodore H. Rosche.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Guns and Ammunition. Represented by Geo. Kroger and Henry Wrinkel.

Other concerns represented at the convention but not making an exhibit were as follows: Farwell, Ozmun, Kirk & Co., St. Paul, Minn., by E. L. Howe; Germer Stove Company, Erie, Pa., by John Antoine; Rathbone, Sard & Co., Aurora, Ill., by Clarence Hunter; Cribben & Sexton Company, Chicago, by J. R. Barse; Sherwin-Williams Company, Cleveland, Ohio, by T. M. Brude.

Death of Thomas E. Hurley.

THOMAS EDWIN HURLEY, of the Brown-Hurley Hardware Company, Des Moines, Iowa, died March 4, aged 39 years. He was secretary of the company and active in its organization and management. He was born in New York, February 7, 1870, and went to Des Moines with his parents 10 years later. After graduating from the High School in 1888, he became a salesman in a furniture house and six months later entered the employ of J. D. Seeberger, in the Hardware line, rising from bill clerk to credit man. A year after Mr. Seeberger's death in 1901, Mr. Hurley, with F. J. Camp and W. S. Brown, reorganized the old business and incorporated for \$200,000, enlarging its scope and territory. In the eight years of this existence the company has more than doubled its business and the capital stock increased to \$300,000. Mr. Hurley was a capable, forceful and progressive man of affairs and was also prominent in public matters pertaining to Des Moines. He leaves a widow and one son.

The Alaska Refrigerator Company.

THE ALASKA REFRIGERATOR COMPANY, Muskegon, Mich., has issued four illustrated catalogues relating to its varied and extensive line of goods. One of these is devoted to Grocers' Refrigerators; another to side ice chamber Refrigerators, zinc lined, white enameled, porcelain lined, opal glass lined, made of ash, golden oak finish; a third to imitation golden oak, charcoal filled Refrigerators, and the fourth catalogue relates to Special Refrigerators and cooling rooms, illustrating residences and public buildings for which these goods have been made to meet special requirements.

C. K. TURNER & SON, INC., 116 Broad street, New York, has arranged to handle the export trade of the John Lauson Mfg. Company, New Holstein, Wis., in Lauson Stationary and Lauson Frost King Gas, Gasoline and Oil Engines in the following countries: Australasia (except Western Australia), South and Central America, Mexico, South Africa, Europe (except Norway and Denmark), Far East, India, Hawaiian and Philippine Islands and the West Indies. C. K. Turner & Son are in a position to give full information and quote lowest prices, terms, &c., for export, the line covering 14 sizes from 2 to 50 hp., both in plain type with circulating cool-

ing tank, and Frost King type with open jacket, furnished in many styles for different requirements.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM GRAHEK HARDWARE COMPANY, which recently started in business in Moro, Minn., handling Shelf Hardware, Stoves, Tinware, House Furnishings, Window Glass, Agricultural Implements, Paints, Oils, Sporting Goods, Furniture, Harness, Saddlery, Buggies and Wagons.

FROM JOHN R. MUSSER, successor to Galer & Musser, Barnesboro, Pa., whose stock was damaged by fire. The lines handled are Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Window Glass, Paints and Oils.

FROM O. T. HIGGINS & CO., successors to J. W. Burget & Son, Francesville, Ind., carrying a stock of general Hardware and Furniture.

FROM SWITZER, STOUT & CO., successors to Geo. Breidenstein, Mansfield, Ohio, handling a general stock of Hardware.

FROM NICHOLSON HARDWARE COMPANY, Medford, Ore., carrying Shelf and Heavy Hardware, Stoves, Tinware, House Furnishings, Paints, Oils, Cement, Sporting Goods, Woven Wire Fencing and Spraying Outfits. S. T. Howard, Jr., has purchased the interest of H. G. Nicholson in the company.

FROM W. A. LUCUS, Mart, Texas, who recently suffered a fire loss on his Hardware stock.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

BATEMAN MFG. COMPANY, Grenloch, N. J.: Illustrated pamphlet showing Combined Double and Single Wheel Hoe, Hill and Drill Seeder, Fertilizer Distributer Attachment, Combined Fertilizer Distributer, Hill and Drill Seeder, Potato Planters, &c.

ROBERT C. REEVES COMPANY, 187 Water street, New York: Descriptive catalogue relating to Agricultural and Horticultural Implements and Machinery, Garden, Field and Flower Seeds, Fertilizers, &c.

CHASE COLVIN, South Charleston, Ohio: Catalogue devoted to Steel Fence Posts, Farm Gates, End, Corner, Gate and Line Posts, Anchor Posts, Lawn Fence and Gates, &c.

WIRE NOVELTY MFG. COMPANY, West Haven, Conn.: Illustrated pamphlet of specialties manufactured for industries that require pointing, snagging, reducing and forming from flat or round wire. The company is also prepared to do blanking, piercing and forming of small sheet metal articles, and has facilities for electro-plating and japanning.

ROBERT ALEXANDER, Springfield, Mass., a veteran Hardware merchant, died on March 4. He was born in Scotland in 1826 and came to America with his parents when a child, the family settling at Enfield, Conn. He learned the tinsmith's trade and in 1861 formed a partnership with Dwight B. Montague to conduct a Hardware and Stove store in Springfield, and carried on the business for 32 years. He leaves a widow and two daughters.

Joseph Dixon Crucible Company.

The Joseph Dixon Crucible Company, Jersey City, N. J., and 68 Reade street, New York, has recently put on the market the Eldorado line of pencils for artists and others requiring the highest grade. These are offered as the company's finest product in pencil quality, with a high-class yellow finish, stamped in gold. There are 12 degrees of hardness, ranging from BB to H H H H H H, the accompanying numbers being 173 to 184, inclusive. The pencils are put up in yellow covered pasteboard boxes of 12 each, and a gross in a carton.

Bommer Screen Door Hinge.

Bommer Brothers, 255-271 Classon avenue, Brooklyn, N. Y., are now prepared to furnish their No. 900 screen door hinge in planished steel bronze plated and antique copper finish, as well as japanned. In this hinge, which is formed from sheet metal, the upper half of the barrel is made in one piece with one flange, and the lower half of the barrel is made in one piece with the other flange. By this construction a hinge of great strength and durability is obtained. The spring is made of the best oil tempered steel wire, and is hidden from view by the barrel, given the hinge a neat and attractive appearance.

Improved Hawkeye Refrigerator Basket.

With a view to reaching the highest point of excellence in the construction of its refrigerator baskets, the Burlington Basket Company, Burlington, Iowa, has adopted a lining of white porcelain enamel. Not only does this style of finish produce a pleasing effect, but being more easily cleaned improves the sanitary qualities of the receptacle. The basket body is woven from especially selected imported reed, and is supplied with a hard-wood bottom covered with two coats of mineral paint. The basswood covers furnished in imitation of dark cherry are set off with polished brass hinges, and tanned leather straps are furnished with brass lock buckles. An especially large and roomy basket fitted with two straps for attachment to the foot board of an automobile is made for the convenience of auto tourists. For this purpose special baskets of any size or design are made to order.

Pierce Sanitary Commode Pail.

The Northwestern Consolidated Iron & Steel Mfg. Company, Burlington, Ia., maker of hardware specialties, has brought out a commode pail of improved design, as here illustrated. It is made of galvanized iron, and has a neatly rounded seat top, supported on the outside by braces riveted to the inside of the pail. The top of the



Pierce Sanitary Commode Pail.

pail conforms in shape to the latest improved closet seats, and is supplied with a convenient bale handle. An airtight cover serves to retain odors, and the pail is tastefully painted and stenciled in assorted colors. The pails are made in 12-quart size, and are packed four in a strong case.

The Loop Fly Killer.

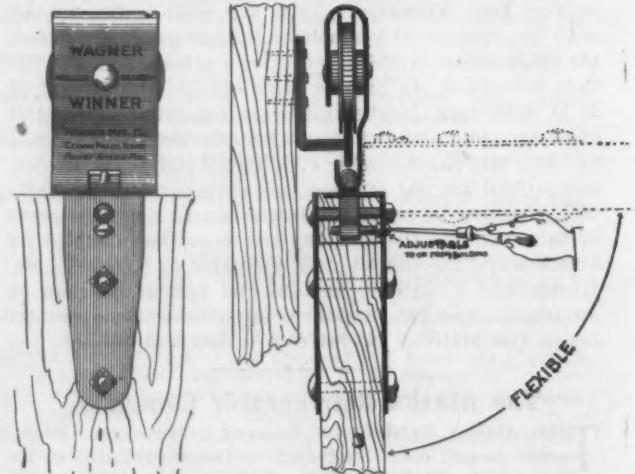


The Loop Fly Killer.

The Wright Wire Company, Worcester, Mass., has brought out the Loop Fly Killer, shown in the illustration. A continuous piece of tinned wire is looped many times and spread into a brush or head, forming the striking surface, to which there are no sharp corners or edges. Consequently, it is claimed that there is no danger of injury to polished surfaces, yet the resilient blow kills quickly and cleanly. The force of the blow tends to spread the loops, but if they should become bunched by hard usage they may be rearranged at the base of the ferrule with thumb and forefinger. A looped handle is furnished, so that the implement may be hung up when desired. The Killer is made of tinned wire throughout, with nickel plated brass ferrule. The goods are packed one dozen in a box, five gross in a case, with display stands.

The Wagner Winner Barn Door Hanger.

The accompanying illustrations represent a barn door hanger offered by Wagner Mfg. Company, Cedar Falls, Iowa. The wheels are formed up of two sides with polished steel bushing to insure easy, smooth running. The



The Wagner Winner Barn Door Hanger.

hanger is made entirely of steel, and, being flexible, allows the door to swing out, as shown by the dotted lines. The hanger is adjustable by the aid of a screw driver either to or from the building, and is arranged so as not to come off the track. The goods are finished in royal blue color with aluminum trimmings, and are packed one dozen pair in a crate.

A Novelty in Table Bell Construction.

The East Hampton Bell Company, East Hampton, Conn., has brought out a new table bell, in which is solved the old problem of casting the handle to the bell. The base of the bell is fastened to the bottom of the mold by a threaded stud and nut, the former having in its end the eye which takes the bell tongue. The metal is then poured into the mold, the result being a solid construction which cannot work loose. This process enables the company to produce the bells at a very rapid rate.

Adjustable Seal Press.

The Adjustable Seal Company, 99 John street, New York, has put on the market the Adjustable seal press, one view of which is here given. The distinctive feature of this press is the wide range afforded in the sealing of bonds, legal papers or documents of any kind without folding, rolling or creasing; the lettering on the seal facing the operator. The use of the seal is controlled by a cylinder lock of the Yale type, but of special construction, having a small flat key, the action of which operates a belt attachment which worms over the plunger plate in locking. The No. 1 or regular size has a clearance for papers of $1\frac{1}{4}$ in. and a height of $3\frac{1}{2}$ in., the extreme

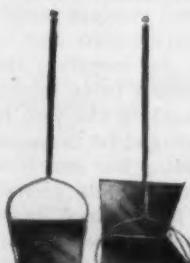
*Adjustable Seal Press.*

outer dimensions being $13\frac{3}{4}$ in. width, and with lever upright $12\frac{1}{4}$ in. high. The four parallel bars are $1 \times \frac{1}{4}$ in., of special steel, nickelized and outer surfaces highly polished. The seal holders are kept in register by the two horizontal screw shafts and moved either way by turning the end crank. The cast portions have two coats of Japan, all gears and pinions are of best high brass, the steel plunger post is $\frac{5}{8}$ in. in diameter, oak base filled and polished, and there is an under layer of felt. The No. 1 size weighs $12\frac{1}{2}$ lb., the No. 2 is heavier and larger, with bars $1\frac{1}{2} \times \frac{3}{8}$ in., 1-in. plunger post and weighs 20 lb. The No. 3 is specially constructed for county clerks and other judicial State and government seals, being similar to the No. 2, except in width and weight. It will accommodate documents $16\frac{1}{4}$ in. wide, and weighs $24\frac{1}{2}$ lb. Estimates will be made for special sizes and on engraved steel or brass die work. New dies will be cut to order, or old ones fitted to this press at the option of the purchaser.

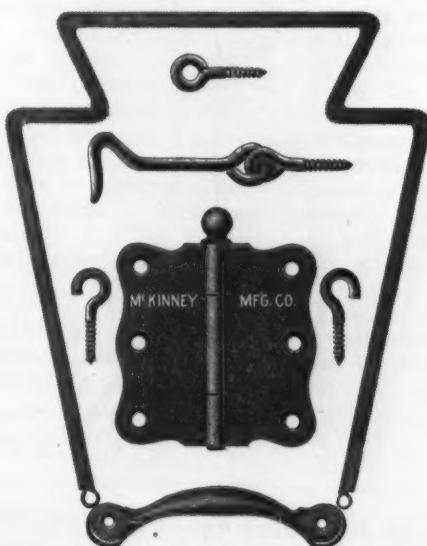
Self Closing Dust Pan.

A new form of dust pan made by the Gabel Mfg. Company, Hawkeye, Iowa, is shown in the accompanying illustration. The pan proper is of the usual form, but is supplied with a bail, to which a handle is attached, thus enabling it to be used without stooping.

It is also provided with a hinged cover which, through a connecting wire, is opened and closed by the motion of the handle. When sweepings are brushed up on the pan the lid automatically closes as the pan is lifted, preventing any scattering of its contents. The utility and convenience of the device is emphasized by the company.

*Self-Closing Dust Pan.***The Keystone Screen Door Fixtures.**

The McKinney Mfg. Company, Pittsburgh, Pa., is offering the combination screen door set shown herewith. The hinges are 3×3 in. wrought steel, ornamental design, fitted with ball tip loose pins, thus making the

*The Keystone Screen Door Fixtures.*

hinges reversible, and also permitting the door to be removed by simply taking out the pins. The handle is $5\frac{1}{4}$ in. long, made of pressed steel; the spring is No. 3 best quality, carefully tested, and the hook is $2\frac{1}{2}$ in. long, with suitable screw eyes. Each set is packed in a neat paper box, complete, with screws.

The Chelco Metal Swing Seal.

The National Metal Seal Company, 511 Congress street, Portland, Maine, has put on the market a metal swing seal for cans, bottles and jars, illustrated herewith. It is made in seven standard sizes and a variety of styles, suitable for varnishes, shellacs, and pharmaceutical needs; also for confectioners' and grocers' specialties, &c. The upper illustration represents the seal in position to slip on a container, and the lower one the under surface of the seal showing the antiseptic non-absorbent material in the collar and top. The seal is made of high-grade steel, die cut, and formed entirely without heat, the original quality and temper of the metal thus being unimpaired. All surfaces of the steel,

*The Chelco Metal Swing Seal.*

including edges, are heavily nickel plated and burnished. The packs, or antiseptic material, are cut and inserted in the body and cover of the seal by automatic machines. An eyelet formed in the cover is forced downward through the body and clinched with precise tension to prevent loose cover motion when in use. The lugs on the body clasp the lip of the container tightly, and when the cover is swung into place, the click denotes that it is closed so securely that only side pressure on the clasp can start it. The company states that the seal never sticks, and never becomes gummed, that it is air-tight and dust proof, and always on the container, ready for use.

The Davis Clipper and Shearing Machine.

H. O. Davis, Desplaines and Fulton streets, Chicago, Ill., is offering the horse clipper and sheep shearing machine shown in the accompanying illustrations. The

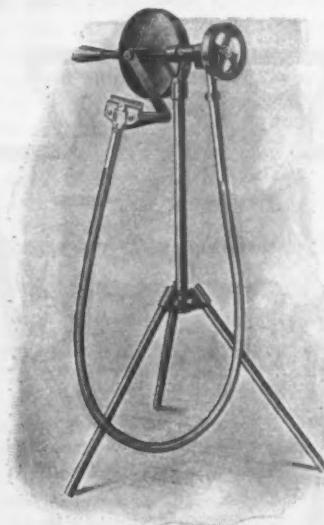


Fig. 1.—The Davis Horse Clipper No. 3.

clipper, Fig. 1, has inclosed gear transmission, dustproof case and an adjustable stand, so that the working parts can be raised or lowered to suit the convenience of the operator. The new type of spring steel flexible casing is strong, light and pliable. The head has a single tension nut. The combs and cutters are referred to as being made of the finest steel, carefully tempered and ground, easy running and fast cutting. The clipper is finished in

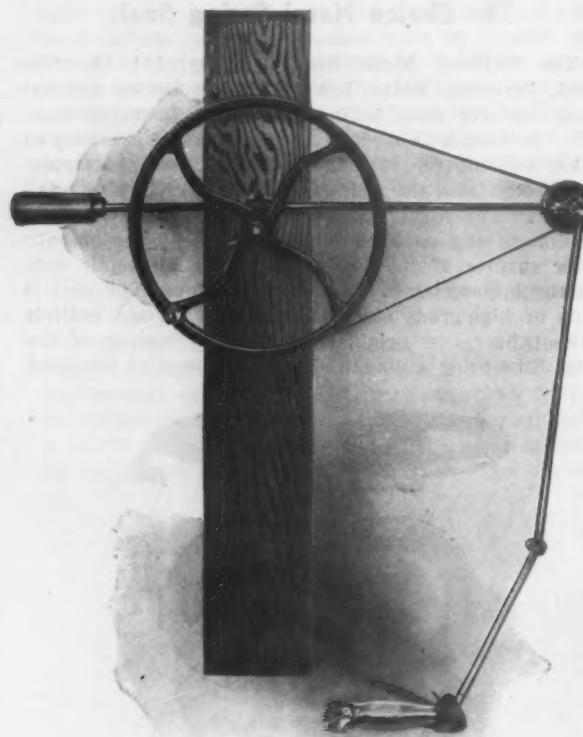


Fig. 2.—The Davis Sheep Shearing Machine.

red enamel, air dried. When packed for shipping the machine weighs 37 lb. The sheep shearing machine shown in Fig. 2 has a large balance wheel made from specially toughened iron carefully turned in the lathe to secure accuracy and free running. It is mounted on Bessemer steel roller bearings, the bearings and shafting being machined true to 1-1000 in. All shafting is specially rolled steel, carefully case hardened by the cyanide

process to insure long life and easy running. The frame is the best wrought tubing. All gears are cut from solid steel bar, and each tooth is milled separately and accurately. The cutting levers, or the part carrying the upper knives, is manganese bronze, with a tensile strength of 65,000 lb. to the inch. The comb and cutter are the best imported Swedish razor steel, specially tempered and ground to one-five thousandth part of an inch. Each machine is furnished with four combs and cutters; the weight when packed for shipment is 85 lb. The manufacturer states that two men can easily shear 150 head of sheep a day with the machine.

Robertson's Concave Tool Grinder.

The Robertson Drill & Tool Company, 1848 Niagara street, Buffalo, N. Y., is offering the concave tool grinder shown herewith. The main frame is designed as a gear case, protecting the gears and forming what is known as the box pattern. The gears, four in number, are all fine cut from the solid metal to produce a noiseless, smooth running tool. The handle has a gravity ball clutch in its hub on the main shaft, allowing the handle to be held stationary at any point and the wheel to revolve. With one turn a speed of from 1000 to 1800



Robertson's Concave Tool Grinder.

revolutions can be obtained instantly. The bench clamp is cast with the frame and is provided with a $\frac{1}{2}$ -in. screw for fastening to table or bench. The machine is furnished with a 6 x $\frac{3}{4}$ in. solid emery wheel. For all kinds of light grinding and more especially for such tools as chisels, plane irons, &c., a universal tool carriage is furnished to make it possible for the inexperienced user to grind tools perfectly and with ease. In operation the tool is clamped in the carriage, the handle being turned with the right hand, the left hand holding the tool to apply a light pressure and move it back and forth across the wheel, it being guided by the sliding bar which is adjustable to give any bevel required. Tools ground on this machine are concave which, it is explained, saves many hours' time and also wearing of expensive oil stones, as the edge is brought up to a razor fineness with a few rubs. For the ordinary grinding of other articles the tool carriage is slipped off the sliding bar, which can then be used as a rest.

Maple City Steel Oilers.

The oilers shown in the accompanying illustration represent part of a line of such goods made by the Maple City Mfg. Company, Monmouth, Ill. The oilers



Auto Pump Oilers.

Illustrated are especially designed for automobiles, motor boats, stationary engines, &c., and are equipped with the Howland pump, having two automatic valves, by means of which oil is delivered to the bearings in regulated quantities by one stroke of the plunger. This design, known as the auto pump oiler, is made of copperized

steel or brass in pint and half pint sizes. An engineer's set, including tray and five pieces, also made by the company, is seamless, drawn from cold rolled extra heavy steel, electro copper-plated inside and out, and highly polished. The same set is furnished with nickel plated finish, and is also made in solid brass. For marine service this set is equipped with a double bottom tray, which contains recesses for holding the oilers in place in rough weather. An oval tray can be substituted for the round if desired. Included among the company's goods is a line of steel oilers made from 20 gauge cold rolled steel with clock spring steel bottoms. The oilers are supplied with spouts from 2½ to 18 in., made interchangeable to fit any oiler with connections turned from solid bar brass containing cut threads. They run in sizes from ¼ to 1 pint, and may be had in four different finishes, including polished copperized nickel and solid brass.

Gardiner Bros. have purchased the business of Smith & Forbes, Osceola, Iowa. The lines handled include Hardware and Agricultural Implements.

PAINTS, OILS AND COLORS**Animal, Fish and Vegetable Oils— $\frac{1}{2}$ gal.**

	P gal.
Linseed, Western, Raw.....	55 @ 56 bbls.
State, Raw.....	55 @ 66
City, Raw.....	56 @ 57
Boiled, 1 $\frac{1}{2}$ P gal. advance on Raw.	
Raw, Calcutta in bbls.....	75 @ .20
Lard, Prime, Winter.....	56 @ .90
Extra No. 1.....	56 @ .48
No. 1.....	56 @ .48
Cotton-seed, Crude, f.o.b. mill, 32½@33½	
Summer, Yellow, prime.....	5.50 @ 6.60
Summer, White.....	5.45 @ 6.95
Yellow, Winter.....	5.60 @ 6.35
Tallow, Acidless.....	56 @ .48
Mennaden, Brown, Strained.....	33 @ .48
Northern Crude.....	
Southern.....	24 @ 22
Light Strained.....	33 @ .48
Bleached Winter.....	36 @ .48
Cocoanut, Ceylon.....	P gal. 56 @ 6.75
Cocoanut, Malabar.....	P gal. 56 @ 7
Cod, Domestic, Prime.....	38 @ .48
Newfoundland.....	38 @ .48
Red Elaine.....	45 @ .48
Saponified.....	P lb. 56 @ 1.60
Olive, Yellow.....	1.50 @ 1.60
Neatsfoot, Prime.....	57 @ .48
Palm, Lagos.....	P lb 61% @ 6%

Mineral Oils—

	P gal.
Black, 29 gravity, 25@30 cold test.....	13 @ 13½
29 gravity, 15 cold test.....	13½ @ 14
Summer.....	12½ @ 13
Cylinder, light filtered.....	20½ @ 21
Dark, filtered.....	18 @ 19
Paraffine, 903-907 sp. gravity.....	14½ @ 15
903 sp. gravity.....	12½ @ 14
93 sp. gravity.....	11 @ 11½
Red.....	13½ @ 14

Miscellaneous—

	P gal.
Barites:	
White, Foreign.....	P ton \$18.50 @ 20.50
Amer. floated.....	P ton 17.00 @ 18.00
Off color.....	P ton 12.50 @ 15.00
Chalk in bulk.....	P ton 3.00 @ 3.40

Putty, Commercial— $\frac{1}{2}$ gal.

	P gal.
In bladders.....	\$1.70 @ 2.00
In bladders, or tubs, 100 lb.....	1.20 @ 1.45
In 1 lb to 5 lb tins.....	2.05 @ 3.25
In 12½ to 50 lb tins.....	1.50 @ 1.90

Spirits Turpentine— $\frac{1}{2}$ gal.

	P gal.
In Machine bbls.....	40% @ 41
In Oil bbls.....	41 @ 41½

Glue—

	P lb.
Cabinet.....	12 @ 15
Common Bone.....	7½ @ 9
Extra White.....	18 @ 24
Fish, Liquid, 50 gal. bbls, per gallon.....	60 @ 1.20
Foot Stock, White.....	12 @ 14
Foot Stock, Brown.....	9 @ 11
German Common Hide.....	10 @ 12
German Hide.....	12 @ 18
French.....	10 @ 10
Irish.....	13 @ 16
Low Grade.....	10 @ 12
Medium White.....	14 @ 19

Gum Shellac—

	P lb.
Bleached, Commercial.....	17½ @ 18
Bone Dry.....	22 @ 23
Button.....	20 @ 30
Diamond I.....	33 @ 34
Fine Orange.....	23 @ 24
A. C. Garnet.....	17 @ 18
G. A. L. Garnet.....	16 @ 17
Bala Button.....	12 @ 13
D. C.	33 @ 34
Octagon B.....	25 @ 26
T. N.....	16 @ 18
V. S. O.....	31 @ 32

Colors in Oil—

	P lb.
Black, Lambblack.....	12 @ 14
Blue, Chinese.....	36 @ 46
Blue, Prussian.....	32 @ 36

White and Red, Lead &c.—

	P lb.
Lead, English white, in Oil.....	10% @ 10%
American White:	
Dry and in Oil, 100, 250 and 500 lb kegs.....	6%
Dry and in Oil, 25 and 50 lb kegs.....	7%
Dry and in Oil, 12½ lb tin pails.....	7½
In Oil, 12½ lb tin pails.....	7½
In Oil, 1, 2, 3 and 5 lb tin cans, ass't.....	8%
Red Lead and Litharge:	
In 100 lb kegs.....	7
In 25 and 50 lb kegs.....	7½
In lots of less than 500 lbs, Red Lead and Litharge over above prices of White and Red Lead and Litharge.	
Lead, American. Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	

Zinc, Dry—

	P lb.
American, dry.....	5% @ 5%
Red Seal (French process).....	6% @ 7
Green Seal.....	7% @ 7½
German Red Seal (French process).....	7% @ 7½
Green Seal.....	7% @ 7½
White Seal.....	8% @ 9
French, Red Seal.....	8% @ 8½
Green Seal.....	10% @ 10%

Dry Colors—

	P lb.
Black, Carbon.....	6% @ 10
Black Drop, American.....	5% @ 8

Black Drop, English.....	5 @ 15
Black, Ivory.....	10 @ 20
Lamp, Commercial.....	4 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	30 @ 31
Blue, Prussian, Domestic.....	22 @ 30
Blue, Ultramarine.....	5 @ 15
Brown, Spanish.....	1/4 @ 10
Carmine, No. 40.....	35.00 @ 3.10
Green, Chrome, ordinary.....	3½ @ 25
Green, Chrome, pure.....	17 @ 25
Ocher, American.....	\$12.00 @ 25.00
American Golden.....	4 @ 5
French.....	1½ @ 2
Foreign Golden.....	3 @ 4
Orange Mineral, English.....	10 @ 12
French.....	12½ @ 13
German.....	12 @ 13
American.....	8½ @ 10
Red, Indian, English.....	5 @ 7
American.....	3 @ 3½
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer. 2½ @ 100 lb \$0.75 @ 1.50	
English.....	\$100 lb \$1.15 @ 1.00
Sienna, Italian, Burnt and Powdered.....	3 @ 9
Italian, Raw, Powdered.....	3 @ 3
American, Raw.....	2½ @ 3
American, Burnt and Pow'd.....	2½ @ 3
Talc, French.....	\$18.00 @ 25.00
American.....	\$15.00 @ 25.00
Terra Alba, French.....	\$100 lb .80 @ 1.00
English.....	\$100 lb .90 @ 1.00
American.....	\$100 lb, No. 1, 75 @ .80
American.....	\$100 lb, No. 2, .60 @ .65
Umbre, Tkey, Bnt. & Pow'.....	2½ @ 3
Turkey, Raw and Powdered.....	2½ @ 3
Burnt, American.....	2 @ 2½
Raw, American.....	2 @ 2½
Yellow, Chrome, Pure.....	12½ @ 14
Oxide Red, American.....	2 @ 7½
Vermilion, English, Imported.....	@ 70
Chinese.....	\$0.90 @ 1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

ISSUED EVERY THURSDAY MORNING.

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Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

Special Goods.—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—“The Iron Age Standard Hardware Lists” contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—	
Columbian and Domestic.....	33%@10%
North's.....	10%
Upson's Patent, per gro. \$3.90.....	10%
Zimmerman's—See Fasteners, Blind.	
Window Stop—	
Ives' Patent.....	10%
Ives' Stop Bed Screws and Washers.....	10%
Taplin's Perfection.....	10%
Ammunition— See Caps, Cartridges, Shells, &c.	
Anti-Rattlers—	
Fernald Mfg. Co., Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, 30.75; 2, 30.10; 4, 31.00; 5, 32.10; Farnell's Quick Shifter, 1/2 doz. pairs.....	32.00@33.00
Anvils—American—	
Eagle Anvils.....	10 lb. 98¢
Hay-Budden, Wrought.....	9½@95%
Trenton.....	10 lb. 9½@9¾
Imported—	
Swedish Solid Steel Paragon, 10 lb. 10@10½¢	
Swed. Solid Steel Sisco, Superior, 10 lb. 10@10½¢	
Ives' Wright & Sons, 10 lb. 81 to 39 lb. 11¢; 35 to 60 lb. 11½¢.	
Anvils, Vice and Drill—	
Millers Falls Co., \$18.00.....	15&10%
Apple Parers— See Parers, Apple, &c.	
Aprons, Blacksmiths'—	
Livingston Nail Co.	10%
Augers and Bits—	
Com. Double Spar.....	30%
Jennings' Patn., Bright 65¢@10%.....	
Black Lip or Blued.....	65@65%
Boring Mach. Augers.....	70%
Car Bits, 12-in. twist.....	40@10%
Ford's Auger and Car Bits.....	50@5%
Ft. Washington Auger Co., Con-and's.....	35%
Forstner Pat. Auger Bits.....	35%
C. E. Jennings & Co.; No. 10 ext. lip. R. Jennings' list.....	35@1%
No. 30, R. Jennings' list.....	25@1%
Russell Jennings' list.....	25@10%
L'Hommedieu Car Bits.....	45%
Mayhew's Counterbore Bits.....	20%
Pugh's Black.....	20%
Pugh's Jennings' Pattern.....	35%
Snell's Auger Bits.....	40%
Snell's Bed Hanger Bits.....	40%
Snell's Car Bits, 12-in. twist.....	40%
Snell's King Auger Bits.....	50%
Swan's, Jennings' Pattern.....	50%
Swan's, Jennings' Pattern.....	50%
Wright's Jennings' Bits.....	50%
Bit Stock Drills—	
See Drills, Twist.	
Expansive Bits—	
Clark's Pattern, No. 1, per doz. \$25.....	
No. 2, \$35.....	60@10%
Ford's, Clark's Pattern.....	60@60@10%
C. E. Jennings & Co., Steer's Pat. 25%.....	
Lavigne Pat., small size, \$18.00; large size, \$26.00.....	60@10%
Swan's.....	60@10%
Gimlet Bits—	
Per gro. Common Dbl. Cut.....	\$3.00@3.25
German Pattern, Nos. 1 to 10, 8½; 11 to 13, 85.75	
Hollow Augers—	
Bonney Pat., per doz. \$5.50@6.00.....	
Ames.....	20@10%
Universal.....	20@10%
Ship Augers and Bits—	
Ship Augers.....	40@10%
Ford's, Clark's Pattern.....	35@45%
C. E. Jennings & Co.: L'Hommedieu's.....	6%
Watrous'.....	35@45%
Swan's.....	65@75%
Awl Hatts— See Handles, Mechanics' Tool.	
Awls—	
Brad Awls: Handled, per gro. \$2.75@3.00	
Unhandled, Shaded, per gro. \$3.60@4.00	
Unhandled, Patent, per gro. \$6@7.00	
Peg Awls: Unhandled, Patent, per gro. \$1.00@3.14	
Unhandled, Shaded, per gro. \$5@7.00	
Scratch Awls: Handled, Com., per gro. \$3.50@4.00	
Handled, Rocket, per gro. \$11.50@12.00	
Elmore Tool Mfg. Co.: Timers' and Brad Awls.....	55@7%
Scratch Awls.....	30%

Awl and Tool Sets— See Sets, Awl and Tool.	
Axes—	
Single Bit, base weights: Per doz. First Quality.....	\$1.75@\$1.00
Second Quality.....	\$1.25@1.40
Double Bit, base weights:	
First Quality.....	27.00@7.50
Second Quality.....	30.50@8.75
Axle Grease—	
See Grease, Axle.	
Axes— Iron or Steel.	
Concord, Loose Collar.....	14@12%
Concord, Solid Collar.....	14@12%
No. 1 Common, Loose.....	3½@4½
No. 1½ Com., New Style.....	14@12%
No. 2 Solid Collar.....	14@12%
Half Patent:	
Nos. 7, 8, 11 and 12.....	70%
Nos. 13 to 14.....	70%
Nos. 15 to 18.....	70@10@70@10@10@5%
Nos. 19 to 22.....	70@10@70@10@10@5%
Axe Grease—	
See Grease, Axe.	
Axes—	
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Nos. 13 to	

Cages, Bird—

Hendryx Brass: Series 3000, 5000,
1100, net list; 1200, 15%; 200, 300,
900, 30%
Hendryx Bronze: Series 700, 800, 30%
Hendryx Enamelled, 35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per 100 lb.,
\$1.00@\$3.85

Sharp, 1 prong, per 100 lb.,
\$1.00@\$3.85

Burke's, 1 prg. Blunt Toe, 3¢; 2 prg.
Blunt Toe, 4¢; 1 prg. Sharp Toe, 4¢;
4¢; 2 prg. Sharp, 4¢; Blunt

Heel, 4¢; Sharp Heel, 4¢; Blunt

Lautier, Blunt, 4¢; Sharp, 4¢; Sharp, 4¢;

Perkins', Blunt, 3 lb., 3.65¢; Sharp,

4.15¢

Can Openers—

See Openers, Can.

Caps, Percussion—

Eley's E. B. \$2@5¢
G. D. per M. 10¢@10¢
F. L. per M. 10¢@10¢
G. E. per M. 10¢@10¢
Musket per M. 10¢@10¢

Primers—

Berdan Primers, \$2 per M. 20¢
Primer Shells and Bullets, 15¢@10%
All other primers per M. \$1.52@1.60

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Blank Cartridges:
32 C. F. 10¢@15¢
38 C. F. 10¢@15¢
22 cal. Rim, \$1.50 10¢@15¢
32 cal. Rim, \$2.75 10¢@15¢
B. B. Caps, Con. Ball, Swgd, \$1.00
B. B. Caps, Round Ball, ... \$1.00
Central Fire, ... 25¢
Target and Sporting Rifle, 15¢@15¢
Primed Shells and Bullets, 15¢@10%
Rim Fire, Sporting, ... 50¢
Rim Fire, Military, ... 15¢@15¢

Casters—

Bed, ... 65¢@70%
Plate, ... 60¢@60¢@5%
Philadelphia, ... 70¢@75%
Acme Ball Bearing, ... 35¢
Gem (Roller Bearing), ... 70¢@10¢@45¢
Steel Gem (Roller Bearing), ... 70¢
Standard Ball Bearing, ... 45¢
Yale (Double Wheel) low list, 40¢@10%

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
3-16 1/4 5-16 3/8 1/2 5/8
67.70 5.10 4.15 3.50 3.30 3.10
5/8-1 1/2 to 1/4 inch.
\$3.00

In cask lots, deduct 25¢.

German Coil, ... 70¢@5%
German Pattern Coil:

6-0 to 1, ... 70¢@10¢@5%
2 and 3, ... 60¢@10¢@70%
4, 5 and 6, ... 50¢@10¢@5%

Halter—

Halter Chains, ... 60¢@5@60¢@10%
German Pattern Halter Chains, list July 24, '97, ... 70¢@5%
Cover Mfg. Co.:
Halter, ... 35¢@5%

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½-6½, Straight, with ring, \$26.00
6½-6½, Straight, with ring, \$27.00
6½-6½, Straight, with ring, \$30.00
6½-10½, Straight, with ring, \$35.00

NOTE. Add 2¢ per pair for Hooks
Twist Traces: add per pair for Nos. 2
and 3, 2¢: No. 1, 3¢; No. 4, to price of
Straight Line.

Eastern Standard Traces, Wag-
on Chain, dc., ... 70%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron, ... 60¢@10¢@5@60¢@10¢@5%

Brass—

Safety and Plumbers' Chain, 75¢
Gal. Pump Chain, ... 10¢@5%

Bridgeport Chain Co.:

Triumph Halter and Coll. 35¢@40%

Triumph Dog, ... 50¢@60¢@60%

Brown Halter and Coll., 15¢@20¢@5%

Covert Mfg. Co.:

Breast, Halter, Heel, Rein, Stal-
lion, ... 40%

Oneida Community:

American Halter, Dog and Kennel
Chains, ... 35¢@20¢@10%

Niagara Dog Leads and Kennel
Chains, ... 15¢@20¢@5%

Wire Goods Co.:

Dog Chain, ... 70%

Universal Dbl.-Jointed Chain, ... 70%

Chain and Ribbon, Sash—

Oneida Community: Steel Chain, ... 60%

Pullman: Bronze Chain, 60%; Steel Chain,
Coppered, ... 60@10%

Sash Chain Attachments, per set, 5¢

Aluminoy Sash Ribbon, per 100
ft., ... 12.50¢@5¢@5

Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue, ... gro., 50¢

Carpenters' Red, ... gro., 50¢

Carpenters' White, ... gro., 40¢

Checks, Door—

Bardsley's, ... 55¢

Pullman, per gro., ... 15¢

Russwin, ... 35¢@5%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools, ... 55¢
Youths' Chests, with Tools, ... 49¢
Gentlemen's Chests, with Tools, 30%
Farmers' Carpenters, etc., Chests,
with Tools, ... 20%
Machinists' and Pipe Fitters'
Chests, Empty, ... 45¢
Tool Cabinets, ... 45¢
C. E. Jennings & Co.'s Machinists'
Tool Chests, ... 7½%

Chisels—

Socket Framing and Firmer

Standard List. 80¢@10@10@10%

Buck Bros., ... 30%

C. E. Jennings & Co.:

Socket Firmer No. 19, ... 25¢@1½%

Socket Framing, No. 15, ... 25¢@1½%

Swan's, ... 65¢@70%

L. & J. J. White & Co., ... 30@30@5%

Tanged—

Tanged Firmer

Standard List. 30¢@5@35%

Buck Bros., ... 30%

C. E. Jennings & Co. Nos. 19, 18, 25@25%

L. & J. J. White Co., ... 35@5%

Cold—

lb.

Cold Chisels, good quality, 15¢@15¢

Cold Chisels, fair quality, 11¢@12¢

Cold Chisel, ordinary, 9¢@10¢

Elmore Tool Mfg. Co.: Cold Chisels, ... 50¢@5%

Chucks—

Almond Drill Chucks, ... 35¢

Almond Turret Six-Tool Chuck, ... 40¢

Beach Pat. each, \$3.00, ... 35¢@2½%

Empire, ... 25¢

Blacksmiths', ... 25¢

Jacobs' Drill Chucks, ... 35¢

Pratt's Positive Drive, ... 25¢

Skinner Lathe Chucks:

Independent, ... 35¢

Universal, Reversible Jaws, ... 35¢

Universal, Com. Style Jaws, ... 40¢

Combination, Reversible Jaws, ... 35¢

Combination, Com. Style Jaws, ... 40¢

Round Body or Box Body, 2 Chuck

Jaws, ... 25¢

Geared Scroll Chucks, ... 25¢

Drill Chucks:

New Model, 25%; Geared Pat-

tern, 25%; Skinner Patent, ... 25¢

Positive Drive, ... 40¢

Planer Chucks, ... 20¢

Standard, ... 45¢

Drill Press Vises, ... 30¢

Face Plate Jaws, ... 35¢

Standard Tool Co.:

Improved Drill Chuck, ... 45¢

Union Mfg. Co.:

Combination, Nos. 1, 2, 3, 4, 5, 6,

7, 8 and 17, 40%; No. 21, ... 35¢

Scroll Combinations, Nos. 83 and

84, ... 30¢

Geared Scroll, Nos. 33, 34 and

35, 35¢

Independent Iron, Nos. 19 and

20, 35¢

Independent Steel, No. 64, ... 25¢

Unknown Drill, Nos. 00, 00, 100,

102, 108, 104, ... 35¢

Union Carb. Drill, ... 25¢

Universal, Nos. 11, 12, 13, 14, 15,

16, 17, 18, 19, ... 35¢

Iron Face Plate Jaws, Nos. 28, 30,

48 and 50, ... 35¢

Steel Face Plate Jaws, Nos. 70 and

72, ... 30¢

Westcott Patent Chucks:

Lathe Chucks, ... 50¢

Little Giant Auxiliary Drill, ... 50¢

Little Giant Double Grip Drill, ... 50¢

Little Giant Drill, Improved, ... 50¢

Oneida Drill, ... 50¢

Scroll Combination Lathe, ... 50¢

Whitaker Mfg. Co.:

National Drill, ... 25¢

Clamps—

Carriage Makers', Star, P. S. & W.

Co., ... 50¢

Resly, Parallel, ... 33¢@10¢

Hammer & Co.:

Adjustable, ... 20@5%

Carriage Makers' H. P. Screw

Myers' Hay Rack, ... 50¢

Lineman's Swedish Neverturn, ... 45¢

Saw Clamps, see Vises, Saw Fliers'

Cleaners, Drain,

Iwan's Champion, Adjustable, ... 50¢

Iwan's Champion, Stationary, ... 40¢

Side Walk—

American Fork & Hoe Co.:

Star, Red, Green, Yellow and

Terra Cotta, 5¢@5, Black, ... 45¢

Giant Lumber, 5¢ in x 15-16 in.

round, all colors, \$12.00; Inde-

libiles, \$10.00; Blacks, ... 50¢

Blue, Red, Green, Yellow and

Terra Cotta, 5¢@5, Black, ... 45¢

Giant Lumber, 5½ in x 15-16 in.

round, all colors, \$12.00; Inde-

libiles, \$10.00; Blacks, ... 50¢

Blue, Red, Green, Yellow and

Terra Cotta, 5¢@5, Black, ... 45¢

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Terra Cotta, 5¢@5, Black, ... 45¢

Giant Lumber, 5½ in x 15-16 in.

round, all colors, \$12.00; Inde-

libiles, \$10.00; Blacks, ... 50¢

Blue, Red, Green, Yellow and

Terra Cotta, 5

Hoes—Eye—
Scovil and Oval Pattern,
60¢ to 10¢ @ \$0.60 & 10%
Grub, list Feb. 23, 1899.
70¢ to 10¢ @ 70¢ & 10%
D. & H. Scovil.....27%
Am. Fork & Hoe Co. (Scovil Pattern).....60¢ & 5%

Handled—

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit.....\$2.50
American Fork & Hoe Co.:
Regular, Cotton.....75¢ & 10¢ & 24%
Crescent, Cultivator.....75¢ & 24%
Mattock, Senior.....70¢
Mattock, Junior.....50¢
Sprouting.....50¢
Tobacco, Harper's.....65¢ & 15¢ & 10%
Warren.....55¢ & 10¢ & 5%
Ivanhoe.....65¢ & 15¢ & 10%
Cultivator, B. B. 6.....70¢ & 10¢ & 5%
Cultivator, B. B. 62.....70¢ & 10¢ & 5%
Weeding, Acme.....72¢ & 10¢ & 5%
Scythe, Lightning.....60¢ & 5%

Hoisting Apparatus—
See *Machines, Hoisting*.**Holders—Bit—**

Angular, P. doz., \$2.00.....45¢ & 10%
Door—
Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....40%

File and Tool—

Nicholson File Holders and File Handles.....33¢ & 40%
Fruit Jar—

Triumph Fruit Jar Holder, P. gross, \$18.00; P. doz.....\$2.00

Trace and Rein—

Fernald Double Trace Holder, P. doz., pairs.....\$1.25
Dash Rein Holder, P. doz.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33¢ & 25%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45¢ & 20%
Coat and Hat, Wrightsville.....60¢ & 20%
Harness, Reading List.....40%

Wire—

Belt, Nos. 1 to 15.....75¢ to 10¢ @ 80%
Wire O. & H. Hooks.....80¢ @ 80¢ & 10%
Bradley Metal Clasp Wire, Coat and Hat, 75¢ & 10¢ @ 80%; Ceiling, 75¢ & 10¢ @ 80%
Columbian Hdw. Co., Gem.....75¢ & 10%
Parker Wire Goods Co., King.....75¢ & 10%
Wire Goods Co.:
Acme, 60¢ & 10%; Chief, 70¢ & 10%;
Crown, 75%; Czar, 65¢ & 10%;
Brace, 75%; Czar Harness, 50%;
Ceiling, 75%.

Wrought Iron—

Box, 6 in., per doz., \$0.90; 8 in., \$1.15.
Cotton.....\$1.25 @ \$1.50
Wrought Staples, Hooks, &c.—
See *Wrought Goods*.

Miscellaneous—

Hooks, Bench, see *Steps, Bench-Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65*
Grass, best, all sizes, per doz., \$2.75 @ \$3.00
Grass, common grades, all sizes, per doz.....\$1.25 @ \$1.50
Whiffletree.....16.5¢ @ 6¢
Hooks and Eyes:
Brass.....60¢ @ 60¢ & 10%
Malleable Iron.....70¢ to 70¢ & 10%
Covert Mfg. Co., Gate and Scuttle Hooks.....40%
Turner & Stanton Co., Cup and Shoulder.....\$3.10 & 10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Kuives, Corn.

Horse Nails—

See *Nails, Horse*.

Horseshoes—

See *Shoes, Horses*.

Hose, Rubber—

Garden Hose, 3/4-in.:
Competition.....ft. 6¢ @ 6¢
3-ply Guaranteed.....ft. 8¢ @ 8¢
4-ply Guaranteed.....ft. 9¢ @ 12¢
Cotton Garden, 3/4-in., coupled:
Low Grade.....ft. 8¢ @ 9¢
Fair Quality.....ft. 10¢ @ 11¢

Irons—Sad—

From 4 to 10.....16.5¢ @ 5¢ &
B. B. Sad Irons.....16.5¢ @ 5¢
Mrs. Potts' cents per set:
Nos. 50 55 60 65

Jap'd Caps.....9¢ 93 96 93
Tin'd Caps.....91 88 1.01 98
New England Pressing, 1b. 3/4 @ 4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60¢ & 10%;
Corner.....60%

Pinking Irons—

Pinking Irons.....\$0.60 @ 6¢

Irons, Soldering

See *Coppers*.

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....35¢ & 2%; Steel, 45%
Lockport.....50¢
Lane's Steel.....30¢ & 5%
Richards' Tiger Steel, No. 120.....50¢ & 10%
Smith & Hemenway Co.'s.....50%

Ladder—

Richards Mfg. Co., Ladder Jacks, 5/2%

Jointers—

Pike Mfg. Co., Saw Jointers, \$7.00..40%

Kettles—

Brass, Spun, Plain.....20¢ @ 25%
Enamelled and Cast Iron—See *Ware, Hollow*.

Knives—**Butcher, Kitchen, &c.—**

Foster Bros.' Butcher, &c.....30¢
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%

American Fork & Hoe Co.:
Easy Cut, P. doz., No. 10 C. H.\$2.10

Easy Cut, P. doz., No. 10 B. C. H.\$2.20

Acme, P. doz.....\$2.35

Dent, P. doz.....\$2.35

Adjustable, Serrated, P. doz.....\$1.90

Serrated, P. doz.....\$1.85

Yankee, No. 1 C. H.\$1.35

Yankee, No. 2 C. H.\$1.15

Drawing—

Standard List.....80¢ to 10¢ @ 80%

C. E. Jennings & Co., Nos. 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 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Livingston Nail Co.:

Dairy	doz.	\$4.00
Little Star	doz.	\$3.00
Hocking Table	doz.	\$2.20
Reading Hardware Co.:		
Advance	doz.	\$4.00
Baldwin	doz.	\$4.25
Reading 72	doz.	\$2.25
Reading 78	doz.	\$2.25

Orange—

Goodell Co., Success	each	\$2.00
Potato—		

Baratoga	doz.	\$7.00
White Mountain	doz.	\$6.00

Picks and Mattocks—

List	75¢ 10%
Cronk's Handled Garden Mattock	\$3.00

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheons—

Brass	50¢ @ \$0.60
Iron, list Nov. 11, '08	.85¢ .00 @ \$0.60

Pipe, Cast Iron Soil—

Eastern Prices:

Standard, 2-in.	68 1/2%
Extra Heavy, 2-in.	74 1/2%
Fittings, Standard and	
Heavy	81 1/4%

Pipe, Merchant—

Carloads to Consumers:

Steel.	Iron.
Blk. Galv.	Blk. Galv.
%	%
1/2 end 1/4 in.	50
1/2 in.	54
1/2 in.	58
1/2 to 6 in.	64
7 to 12 in.	56

*Extra 10
4 1/2 to 5 1/2%*

Pipe, Vitrified Sewer—

Carload lots.	
Standard Pipe and Fittings, 3 to 2 1/2 in., f.o.b. factory:	
First-class	87%

Second-class	90%
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Pipe, Stove—

Per 100 joints.

Edwards' Nested:	C. L. L. C. L.
5 in., Standard Blue	35.25
6 in., Standard Blue	7.75
7 in., Standard Blue	7.75
5 in., Royal Blue	8.00
6 in., Royal Blue	8.50
7 in., Royal Blue	9.50

Wheeling Corrugating Co.'s Nested:

5 in., Uniform Color	\$5.90
6 in., Uniform Color	7.40
7 in., Uniform Color	7.40

Planes and Plane Irons—

Wood Planes—

Bench, first qual.	30 @ \$0.65
Bench, second qual.	30 @ \$0.65
Molding	25 @ \$0.65

Chapin-Stephens Co.:	
Bench, First Quality	30%
Bench, Second Quality	40%
Molding and Miscellaneous	25%
Toy and German	30%

Union	60%
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Iron Planes—

Chaplin's Iron Planes	60%
Union	60%

Plane Irons—

Wood Bench Plane Irons, list

Dec. 12, '08	25%
Buck Bros.	30%

Chapin-Stephens Co.	25%
Union	30%

L. & I. J. White	20 & 25%
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Planters, Corn, Hand—

Plates—

Fellow	1 lb. 53 1/2¢
Avery Stamping Co.:	

Standard Wrot. Steel Fellow Plates	
in 100 lbs., per 100 lb. 1/4-in. to	
1 1/4-in., \$4.00 net; 1 1/4-in. to 2-in.,	

inclusive	\$5.75 net.
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Steel Pipe Hook—

Never-Break

Pliers and Nippers—

Wood Bench Plane Irons, list

Dec. 12, '08	25%
Buck Bros.	30%

Chapin-Stephens Co.	25%
Union	30%

L. & I. J. White	20 & 25%
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Planters, Corn, Hand—

Plates—

Fellow	1 lb. 53 1/2¢
Avery Stamping Co.:	

Standard Wrot. Steel Fellow Plates	
in 100 lbs., per 100 lb. 1/4-in. to	

1 1/4-in., \$4.00 net; 1 1/4-in. to 2-in.,	
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inclusive	\$5.75 net.
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Swedish Side, End and Diagonal

Cutting Pliers—

Utica Drop Forge & Tool Co.:

Pliers and Nippers, all kinds—

Plumbs and Levels—

Chapin-Stephens Co.:

Plumb and Level

Improved Button

Cronk's

No. 20 Lineman's

Stub's Pattern

Combination and others—

Elmore Tool Mfg. Co.:

Gas Pliers

Wire Cutting Pliers

Heller's Farriers' Nippers and Tools

P. S. & W. Timmers' Cutting Nipper

Dissinton's Pocket Levels

Stanley's Duxel

Woods' Extension

Points, Glaziers'

Bulk and 1-lb. papers

1/2-lb. papers

1/4-lb. papers

Inch

9¢

1/2-lb. 9¢

1/4-lb. 10¢

1/2-lb. 11¢

Inch

10¢

1/2-lb. 10¢

1/4-lb. 11¢

Inch

11¢

1/2-lb. 11¢

1/4-lb. 12¢

Inch

12¢

1/2-lb. 12¢

1/4-lb. 13¢

Inch

13¢

1/2-lb. 13¢

1/4-lb. 14¢

Inch

14¢

1/2-lb. 14¢

1/4-lb. 15¢

Inch

15¢

1/2-lb. 15¢

1/4-lb. 16¢

Inch

16¢

1/2-lb. 16¢

1/4-lb. 17¢

Inch

17¢

1/2-lb. 17¢

1/4-lb. 18¢

Inch

18¢

1/2-lb. 18¢

1/4-lb. 19¢

Inch

19¢

1/2-lb. 19¢

1/4-lb. 20¢

Inch

20¢

1/2-lb. 20¢

1/4-lb. 21¢

Inch

21¢

1/2-lb. 21¢

1/4-lb. 22¢

Inch

22¢

1/2-lb. 22¢

1/4-lb. 23¢

Inch

23¢

1/2-lb. 23¢

1/4-lb. 24¢

Inch

24¢

1/2-lb. 24¢

1/4-lb. 25¢

Inch

Sausage Stuffers or FillersSee *Stuffers or Fillers, Sausage*.**Saw Frames**
See *Frames, Saw*.**Saw Sets**—See *Sets, Saw*.**Saw Tools**—See *Tools, Saw*.**Saws**—

Atkins': Circular 45%

Band 50@50&10%

Butcher Saws 50%

Cross Cuts 35%

One-Man Cross Cut 40%

Narrow Cross Cut 50%

Hand, Rip and Panel 35@5%

Miter Box and Compass 40%

Mulay, Mill and Drag 45%

Wood Saws 40@10%

Chapin-Stephens Co.: Turning Saws and Frames 30@30&10%

Diamond Saw & Stamping Works:

Sterling Kitchen Saws 30@10&10%

Dinton's: Circular, Solid and Ins'ted Tool 50%

Band, 2 to 18 in, wide 60%

Band, 1/2 to 1% 60%

Crosscuts 45%

Narrow Crosscuts 50%

Mulay, Mill and Drag 50%

Framed Woodsaws 25%

Wood saws, Blades 25%

Wood saws, Rods, Tinned 15%

Hand Saws, Nos. 12, 90, 9, 16, d100 25%

D8, 120, 76, 77, 8 25%

Hand Saws, Nos. 7, 107, 187% 3, 1 30%

0, 00, Combination 30%

Compass, Key Hole, &c 25%

Butcher Saws and Blades 30%

C. E. Jennings & Co.'s: Back Saws 16%

Butcher Saws 25@7%

Compass and Key Hole Saws 33@7%

Framed Wood Saws 25@7%

Hand Saws 25@7%

Wood Saw, Blades 33@4@7%

Miller's Falls: Butcher Saws 15@10%

Star Saw Blades 15@10%

Massachusetts Saw Works: Victor Kitchen Saws 40@10&5%

Butcher Saws Blades 35@40%

Peace & Richardson's Hand Saw 30%

Simonds': Circular Saws 45%

Crescent Ground Cross Cut 30%

One-Man Cross Cuts 40@10%

Gang Mill, Mulay and Drag Saws 45%

Band Saws 50%

Back Saws 25@25@7%

Butcher Saws 35@35@7%

Hand Saws 25@25@7%

Hand Saws, Bay State Brand 45%

Compass, Key Hole, &c 25@25@7%

Wood Saws 40@7%

Wheeler, Madden & Clemson Mfg. Co.'s: Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%

Dinton's: Concave Blades 25%

Keystone Blades 35%

Hack Saw Frames 30%

Simonds, 25%: The Best 35%

Culley 30%

C. E. Jennings & Co.'s: Hack Saw Frames, Nos. 175, 180 40@7%

Hack Saws, Nos. 175, 180, complete 40@7%

Goodell's Hack Saw Blades 40@10%

Griffin's Hack Saw Frames 35@8@10%

Griffin's Hack Saw Blades 35@8@10%

Star Hack Saws and Blades 15@10%

Sterling Hack Saw Blades 30@10@5%

Sterling Hack Saw Frames 30@10@10%

Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 20%

Victor Hack Saw Blades 20%

Victor Hack Saw Frames 40%

Whitaker Mfg. Co.: National Hand Blades, Hand Frames, Power Blades 40%

Scallop—

Barnes' No. 7, \$15 25%

Barnes' Scroll Saw Blades 40%

Barnes' Velocipede Power Scroll Saw, without boring attachment 15%

Lester, complete, \$10.00 20%

Rogers, complete, \$1.50 and \$1.00 15@10%

Seals—

Union Platform, Plain \$2.10 @ 2.20

Union Platform, Std. \$2.20 @ 2.30

Chatillon's: Eureka 25%

Favorite 40%

Grocer's Trip Scales 50%

The Standard Portables 40%

The Standard R. R. and Wag.

Scrapers—

Box, 1 Handle \$1.25@2.10

Box, 2 Handle \$3.35@2.50

Ship Light, \$2.00; Heavy, \$4.50

Chapin-Stephens Co., Box 30@30@10%

Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, dos., 1 in, \$2.50@

2.75; 1 1/4, \$3.00@3.25; 1 1/2, \$3.50@3.75

Bench, Wood 20@20@10%

Hand, Wood 70@70@10@10%

Chapin-Stephens Co., Hand 70@70@10@2%

Coach, Lag and Hand Rail-

Lag, Cone Point 80@85%

Coach, Gimlet Point 80@85%

Hand Roll 70@70@75@

Jack Screws—

Standard List 70@10@75@

Millers Falls 50@10@10%

Swett Iron Works 70@75@

Machine—
Cut Tread, Iron, Brass or Bronze:

Flat Head or Round Head 50@50@10%

Fillister Head 40@40@10%

Rolled Thread, F. H. or R. H. Iron 75@10%

F. H. or R. H., Brass, Nos. 8 to 14 65@10%

Set and Cap—

Set (Iron) 75@10@75@12%

Set (Steel), net advance over Iron 25%

Sq. Hd. Cap 70@10@75@12%

Flat Hd. Cap 70@10@75@12%

Rd. Hd. Cap 50@67@12%

Fillister Hd. Cap 60@71@12%

Wood—

List July 23, 1903.

Flat Head, Iron 87@12@5@12@%

Round Head, Iron 85@5@12@%

Flat Head, Brass 80@5@12@%

Round Head, Brass 77@5@12@%

Flat Head, Bronze 75@5@12@%

Round Head, Bronze 72@5@12@%

Drive Screws 87@2@5@12@%

Scroll Saws—

See Saws, Scroll.

Scythes—

Per doz. Plain Grass, Cutting Edge Polished \$6.25@12@6.50

Clipper, Bronzed Web \$6.50@12@6.75

Solid Steel, Web and Backs Polished \$7.00@12@7.25

Bush, Weed and Bramble, Painted \$6.50@12@6.75

Grain, Pointed, Cutting Edge Polished \$8.25@12@8.50

Clipper Grain, Bronze Web \$8.50@12@8.75

Seeders, Raising—

Enterprise 25@30@

Sets—Awl and Tool—

Fray's Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12 50%

Miller's Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$18; No. 5, \$18. 20@10@10%

Garden Tool Sets—

American Fork & Hoe Co.: Rake, Shovel and Hoe, per doz. sets, No. 3 P. F. 37.25

Sets, Nail—

Octagon gro. \$3.50@3.75

Buck Bros. 27.12%

Elmore Tool Mfg. Co. 30%

Mayhew's Corrugated Cup Pt. 40@10%

Snell's Knurled, Cup Pt. 40@10%

Victor Knurled, Cup Pt. 40@10%

Giant Royal Cross Cut 30@25@30@

Royal Hand 30@25@30@

Taintor Positive 30@25@30@

Shaving—

Fox Shaving Sets, No. 30 per doz. net, \$24.00

Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.: Fast Cut Pocket Knife Hones, per doz. 51.50

Mounted Kitchen Sand Stone, per doz. 51.50

Natural Grit Carving Knife Hones, per doz. 51.50

Quick Cut Emery Carving Knife Hones, per doz. 51.50

Quick Edge Pocket Knife Hones, per doz. 51.50

Smith & Hemenway Co., Eureka 50%

Shaves, Spoke—

Iron dos. \$1.25

Wood dos. \$2.00

Bailey's (Stanley R. & L. Co.) 45%

Chapin-Stephens Co. 30@20@10%

Goodell's, per doz. \$10.00 15@10%

Shears—

Cast Iron 8 9 in.

Best 16.00 18.00 20.00 gro.

Good 13.00 15.00 17.00 gro.

Cheap 5.00 6.00 7.00 gro.

Straight Trimmers, &c.

Best quality Jap'd 70@10@65@

Best Quality Nickel 60@10@65@

Tailor's Shears 40@40@10%

Acme Cast Shears 40@40@5%

Columbian Cutlery Co.: Sheep, 1900 list 30@10@5%

Grass 50@10@5%

Horse or Mule 50@10@5%

Full Nickel 50@10@5%

Heinrich's Tailor's Shears 10%

National Cutlery Co.'s Nickel Plated, 60@10%; Japan Handles 70@10%

J. Wiss & Sons Co.: Best Quality Jap'd 60@10@5%

Best Quality Nickeled 50@10@5%

Tailor's 25%

Tinners' Sn's—

Steel Blades 20@25@20@10%

Steel Ladd Blades 50@10@10%

Acme Cast Snips 10@15@5%

W. H. Compton Shear Co., Forged Steel Handles 35%

Forged Handles, Steel Blades, Berlin 50%

Heinrich's Snips 40%

Jennings & Griffin Mfg. Co., 5 in. to 10 in 33@4@14@%

National Cutlery Co.: Forged Steel 50%

Niagara Snips 40%

P. W. R. W. Forged Handles 25%

J. Wiss & Sons Co.: Wiss Forged Steel 25%

Pruning Shears—

W. H. Compton Shear Co., Dropped Forged Steel 35%

Cronk's Hand Shears 33@2

Cronk's Wood Handle Shears 33@2

Distant's Combined Pruning Hook & Saw 25%

Distant's Pruning Hook only 25%

J. T. Henry Mfg. Co.: Pruning Shears, all grades 40%

P. S. & W. Co.: 40@10@10@10%

Columbian Cutlery Co.: Hedge, Wilcox Brand 60@10%

Lawn and Border, Wilcox Brand 60@10%

Wm. Rogers & Son 60@10%

Sheaves—Sliding Door—

Reading 40%

R. E. list 15%

Sliding Shutter—

Reading list 40%

R. E. list 15%

Sheels—Shells, Empty—

Brass Shells, Empty: Climax, 10 and 12 gauge 60@5%

Club, Rival, 65@5%; First Quality 60@5%

Paper Shells, Empty: New Rapid, 10 and 12 gauge 25@10%

New Rapide, 10 and 12 gauge 25@10%

Climax, 10 and 12 gauge 25@10%

Ideal, 10, 12, 16 and 20 gauge 25@10%

Leader grade 25@10%

Union, League, 10

Scythe Stones—

Pike Mfg. Co., 1907 list:
 Black Diamond S. S. 7 gro. \$12.00
 Lamotte S. S. 7 gro. \$11.00
 White Mountain S. S. 7 gro. \$9.50
 Green Mountain S. S. 7 gro. \$7.00
 Extra Indian Pond S. S. 7 gro. \$8.00
 No. 1 Indian Pond S. S. 7 gro. \$7.50
 No. 2 Indian Pond S. S. 7 gro. \$5.00
 Leader Red End S. S. 7 gro. \$5.00
 Quick Cut Emery 7 gro. \$10.00
 Pure Corundum 7 gro. \$15.00
 Crescent 7 gro. \$7.00
 Emery Scythe Rifles, 2 Coat. \$8.80
 Emery Scythe Rifles, 3 Coat. \$11.00
 Emery Scythe Rifles, 4 Coat. \$13.20
 Balance of 1907 list 33%
 Lectro (Artificial) 7 gro. \$12.00 33%
 \$12.00
 Lightning (Artificial) 7 gro. \$18.00
 \$18.00

Stoppers, Bottle—

Victor Bottle Stoppers. 7 gro. \$9.00
Stops—Bench—
 Miller Falls. 15¢ & 10¢
 Morrill's. 50¢ doz. No. 1. \$10.00 50¢
 Miller's. No. 2. \$12.50 50¢

Door—

Chapin-Stephens Co. 50¢ & 10¢

Plane—

Chapin-Stevens Co. 20¢

Straps—Box—

Acme Embossed, case lots. 20¢ & 10¢
 Cary's Universal, case lots. 20¢ & 10¢

Stretchers, Carpet—

Cast Iron, Steel Points. doz. 55¢
 All Steel Socket. doz. \$2.00 @ 2.25
 Excelsior Stretcher and Tack Hammer Combined, 7 gro. \$6.00 20¢

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses. 25¢ & 25¢
 National Specialty Co., list Jan. 1902. 36¢ & 5¢
 P. S. & W. Co. 40¢ & 5¢

Sweepers, Carpet—

Goshen Sweeper Co.: Per doz.
 Gilt Edge. \$2.00
 Superfine. 25¢
 Majestic. 24¢
 Select, Nickoled. 22¢
 National Sweeper Co.:
 National Queen, Nickoled. 22¢
 Martha Washington, Nickoled. 22¢
 Monarch, Japanned. 20¢
 Perpetual, Japanned. 18¢
 Streator Metal Stamping Co.:
 Model E. Sanitaire. \$25.00
 Eureka. 15.00
 Streator Majestic, Nickoled. 24¢
 Streator Conqueror, Japanned. 22¢

NOTE.—Leading Manufacturers give the following rebates from list prices: 50¢ per dozen on three-dozen lots; \$1 per dozen on five-dozen lots, \$3 per dozen on ten dozen lots.

Tacks, Finishing Nails, &c.—

American Carpet Tacks. 90¢ & 2¢
 American Cut Tacks. 90¢ & 2¢
 Sweden's Cut Tacks. L. 90¢ & 2¢
 Sweden's Upholsterers'. 90¢ & 2¢
 Gimp Tacks. 90¢ & 2¢
 Lace Tacks. 90¢ & 2¢
 Trimmers' Tacks. 90¢ & 2¢
 Looking Glass Tacks. 65¢
 Bill Posters' and Railroad Tacks. 90¢ & 2¢
 Hungarian Nails. 80¢
 Finishing Nails. 70¢

Trunk and Clout Nails. 75¢ & 2¢
NOTE.—The above prices are for straight weights.

Miscellaneous—

Double Pointed Tacks, 90¢ & tens @ 2%

See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:
 Gal. Gasoline Oil
 50 \$2.75 \$3.00
 60 \$3.50 \$4.00
 100 \$5.00 \$7.50

Tapes, Measuring—

American Asses' Skin. 50¢ & 2¢
 Patent Leather. 25¢ @ 25¢ & 5¢
 Steel. 33 1/3 & 5¢
 Chesterman's. 25¢ @ 25¢ & 5¢

Kaufel & Esser Co.: Favorite, Ass Skin. 40¢ & 10¢
 Favorite, Duck and Leather. 25¢ & 5¢ & 10¢

Metallic and Steel, lower list. 35¢
 35¢ & 5¢; Pocket. 35¢ & 5¢.

Lukins': Asses' Skin. 40¢ & 10¢
 Metallic. 30¢ & 5¢

Patent Bend, Leather. 25¢ @ 25¢ & 10¢
 Pocket. 40¢ & 10¢
 Steel. 33 1/3 & 5¢

Wiesbush & Hiller: Chesterman's Metallic, No. 34L.
 etc. 25¢

Chesterman's Steel, No. 1038L.
 etc. 35¢

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 1/4-inch and larger per 100 lb. \$2.55 @ \$2.50

Thermometers—

Tin Case, Cabinet, Flange.

Dairy, do. 30¢ & 35¢

Ties, Bale—Steel Wire—

Single Loop. 82¢ & 10¢

Monitor, Cross Head, do. 70¢ & 7¢

Tinners' Shears, &c.—

See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—

See Benders and Upsetters, Tire.

Tools—Coopers'—

L. & I. J. White. 20¢ & 5¢

Haying—

Myers' Hay Tools. 50¢

Ice Tools—

Gifford-Wood Co. 15¢

Miniature—

Smith & Hemmeyer Co., David-son, 7 gro., Nickel Plated. \$1.50;

Gold Plated. \$2.00

Saw—

Atkins' Cross Cut Saw Tools. 35¢ & 5¢

Simond's Improved. 33 1/3¢

Simond's Crescent. 30¢

Ship—

L. & I. J. White. 25¢

Torches—

Hammers, Engine. 7 gro. \$1.50

Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Balloon, Globe or Acme, doz. \$1.15 @ \$1.25; gro. \$1.50 @ \$1.60

Harper, Champion or Paragon, doz. \$1.25 @ \$1.40; gro. \$1.80 @ \$1.90

Game—

Imitation Oneida. 75¢ @ 10¢

Newhouse. 50¢ & 5¢

Hawley & Norton. 65¢ & 10¢

Victor. 75¢ @ \$1.25

Oneida Community Jump. 70¢ & 10¢

Stop Thief. 60¢

Tre Trap. 60¢

Hector. 75¢ @ \$1.25 & 10¢

Mouse and Rat—

Mouse, Wood, Choker, doz., holes, 12¢

Mouse, Round or Square Wire, doz. 85¢ @ \$0.90

Marty French Rat and Mouse Traps (Genuine), 7 gro.:

Create lots. Small lots.

No. 1, Rat. \$1.50

No. 3, Rat. \$3.75

No. 3 1/2, Rat. \$6.50

No. 5, Mouse. \$4.70

No. 5, Mouse. \$5.25

Animal Trap Co.:

Out o' Sight, Mouse. 7 gro. \$0.60

Out o' Sight, Rat. 7 gro. 1.20

Easy Set, Mouse. 7 gro. 35¢

Easy Set, Rat. 7 gro. 35¢

Out o' Sight Chockers. 7 gro. 12

Out o' Sight, Tin, 5-hole. 7 gro. traps

75¢ @ \$1.75

Trowels—

Brick and Pointing. 25¢

Dixon Plastering. 20¢

Dixon "Standard Brand" and Gar-den Trowels. 30¢

Kohler Steel Standard Trowels, 7 gro., 5 in. \$1.80; 6 in. \$2.00

Never-Break, Forged Steel Garden Trowels, in bulk, net 7 gro. \$5.50

In 1 doz. boxes. \$4 gro. \$6.00

Woodrough & McParlin, Plastering. 25¢

Trucks, Warehouse, &c.—

B. & L. Block Co.:

New York Pattern. 50¢ & 10¢

Western Pattern. 60¢ & 10¢

Handy Trucks. 70¢ doz. \$16.00

Grocery. 70¢ doz. \$15.00

McKinley Trucks. each, net \$10.00

Model Stove Trucks. 70¢ doz. \$18.50

Tubs, Wash—

Myrpr's list, price per gross.

No. 0. 1 8 3

Galvanized. 85¢ \$70 \$91 \$103 10¢ & 7½¢

6¢ & 5¢

Plain. 85¢ \$70 \$91 \$103 10¢ & 7½¢

Country Hollow Ware, per 100 lbs. \$2.75 @ \$3.00

White Enamelled Ware:

Marlin Kettles. 65¢ & 10¢

Covered Wares:

Tinned and Turned. 35¢ & 10¢

Enamelled. 45¢ & 10¢

See also Pots, Glue.

Enameling—

Agate Nickel Steel Ware. 33 1/3¢

Elan-ze. 60¢ & 10¢

Iron Clad Ware. 70¢ & 10¢

Lava and Volcanic. Enamelled. 40¢ & 10¢

Cleveland Stamping & Tool Co.:

Solid Steel Spiders and Grid-dies. 65¢ & 5¢

Solid Steel Kettles. 60¢ & 5¢

Trucks, Warehouse Grade:

100 ft. rolls, 2 1/2 to 4 in. wide,

Per 100 sq. ft.

Nos. 2, 2 1/2 and 3 Mesh. \$2.75

Nos. 4 and 5 Mesh. \$3.00

No. 6 Mesh. \$3.25

Nos. 7 and 8 Mesh. \$3.75

Wire Cloth and Netting—

Galvanized Poultry Netting, 80¢ & 10¢ @ \$0.60 & 10¢

Screen Cloth, 12 Mesh, Per 100 sq. ft.; Painted, \$1.55; Gal-vanized, \$1.95; 14 Mesh, Bronze \$6.50.

Standard Galv. Hardware Grade:

100 ft. rolls, 2 1/2 to 4 in. wide,

Per 100 sq. ft.

Nos. 2, 2 1/2 and 3 Mesh. \$2.75

Nos. 4 and 5 Mesh. \$3.00

No. 6 Mesh. \$3.25

Nos. 7 and 8 Mesh. \$3.75

Wire, Barb—See Trade Report

Wrenches—

Agricultural. 80¢ & 10¢ @ \$0.60 & 10¢

Alligator or Crocodile. 70¢ & 10¢ @ 75¢

Bauer Pattern S Wrenches, 70¢ & 10¢ @ 70¢

Drop Forged S. 45¢ @ 45¢

Acme. 60¢ & 10¢

Alligator Pattern. 70%; Bull Dog. 70%

Bemis & Call's. Adjustable S. 40¢ & 5¢; Adjustable S Pipe. 40¢ & 5¢; Briggs Pattern. 40%; Combination Bright. 50%

Steel Handle Nut. 50¢ & 5¢

Combination Black. 50¢ & 5¢

Merrick Pattern. 50¢ & 5¢

Boardman's. 40¢

Coe's Genuine Knife Hdl. 10¢ & 10¢ & 5¢

Coe's Genuine Knife Hdl. 10¢ & 10¢ & 5¢

Coe's Genuine Key Model. 40¢ & 10¢ & 5¢

Coe's Genuine Hammer Handle. 40¢ & 10¢ & 5¢

Coe's "Mechanics". 40¢ & 10¢ & 10¢ & 5¢

Donohoe's Engineer. 40¢ & 10¢

Eagle. 30¢

Gem Pocket. 30¢

Hercules. 70¢

W. & B. Machinist:

Case lots. 50¢ & 10¢

Less than case lots. 50¢

W. & B. Railroad Special:

Case lots. 50¢

Less than case lots. 40¢ & 10¢ & 5¢

Solid Handles, F. & W. & W. & W.:

full cases. 50¢ & 10¢ & 5¢

Standard Nipple Mfg. Co.:

Duplex Chain. 50¢

Uwanta Wrench Co.:

Uwanta Special, Iron Handle. 40¢ & 10¢ & 5¢

Other Wrenches. 50¢

Vulcan and Acrippa Chain. 50¢

Whitaker Machinist's. 50¢ & 10¢

Wizard Adjustable Ratchet. 50¢

Fruit Jar—

Ben. P. Forbes, Triumph, 7 gro.

\$7.50; per doz. \$10.00

Wrought Goods

